REPORT

OF THE

SANITARY COMMISSION

OF

MASSACHUSETTS.

1850.

BOSTON:
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1850.

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MASSACHUSETTS. Sanitary Commission
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REPORT

OF A

GENERAL PLAN

FOR THE

Promotion of Public and Personal Health,

DEVISED, PREPARED AND RECOMMENDED

BY THE

COMMISSIONERS

APPOINTED UNDER A

RESOLVE OF THE LEGISLATURE OF MASSACHUSETTS,

RELATING TO A

SANITARY SURVEY OF THE STATE.

PRESENTED APRIL 25, 1850.

BOSTON:
DUTTON & WENTWORTH, STATE PRINTERS,
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1850.

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This Report was presented to the Legislature, in the House of Representatives, April 25, 1850; when it was laid upon the table, and two thousand copies ordered to be printed.

COMMONWEALTH OF MASSACHUSETTS.

In the year One Thousand Eight Hundred and Forty-Nine.

RESOLVE

Relating to a Sanitary Survey of the State.

Resolved, That His Excellency the Governor, by and with the advice and consent of the Council, be and he is hereby authorized to appoint three persons to be Commissioners, to prepare and report, to the next General Court, a plan for a Sanitary Survey of the State, embracing a statement of such facts and suggestions as they may think proper to illustrate the subject. The Commissioners shall be paid, for the time actually spent in the discharge of their duty, and for their necessary travel, the same compensation that is paid to the members of the General Court; and also for blanks and circulars used, and for postage and other necessary expenses paid, in said commission; and a sum not exceeding fifty dollars, to purchase books on the subject; *provided, however*, that said books shall be considered the property of the Commonwealth, and shall be deposited in the State Library when the commission shall be dissolved: *provided*, the whole expense of said commission shall not exceed five hundred dollars; and that warrants be drawn accordingly.

House of Representatives, May 1, 1849.

Passed. FRANCIS B. CROWNINSHIELD, *Speaker*.

In Senate, May 2, 1849.

Passed. JOSEPH BELL, *President*.

May 2, 1849.—Approved.

GEO. N. BRIGGS.

Commonwealth of Massachusetts.

To all Persons to whom these Presents shall come,

GREETING :

GEO. N. BRIGGS.

WHEREAS, by a Resolve of our Legislature, approved by our Governor, the second day of May, in the year of our Lord one thousand eight hundred and forty-nine, entitled "Resolve relating to a Sanitary Survey of the State," it is provided, "that His Excellency the Governor, by and with the advice and consent of the Council, be and he is hereby authorized to appoint three persons to be Commissioners, to prepare and report, to the next General Court, a plan for a Sanitary Survey of the State, embracing a statement of such facts and suggestions as they may think proper to illustrate the subject :"

NOW, THEREFORE, be it known, that we, by our Governor, with the advice and consent of the Council, confiding in the ability of LEMUEL SHATTUCK, of Boston, NATHANIEL P. BANKS, Jr., of Waltham, and JEHIEL ABBOTT, of Westfield, do hereby appoint them Commissioners for the purposes aforesaid, and enjoined in the Resolve above recited, with all the powers and authority, and subject to the duties and obligations which are or may be by law imposed upon them in their said capacity.

In testimony whereof, we have caused the seal of the Commonwealth to be hereunto affixed, the third day of July, in the year of our Lord one thousand eight hundred and forty-nine, and of the Independence of the United States the seventy-third.

By His Excellency the Governor, with the advice and consent of the Council.

WM. TUFTS,
Deputy Secretary of the Commonwealth.

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CORRECTION.—Page 114, sixth line from the top, for *eighth* section, read *sixth* section.

REPORT OF THE COMMISSIONERS.

The Commissioners, appointed on the third day of July last "to prepare and report, to the next General Court, a plan for a Sanitary Survey of the State, embracing a statement of such facts and suggestions as they may think proper to illustrate the subject," have considered the matters referred to them, as far as the limited time at their command, and other circumstances, since their appointment, would permit, and submit their REPORT.

As the object of our commission is comparatively new, and may not be clearly understood by every person, we will state what we understand to be its intention. By a Sanitary Survey of the State is meant, an examination or survey of the different parts of the Commonwealth,—its counties, its towns, and its localities,—to ascertain the causes which favorably or unfavorably affect the health of its inhabitants. The word *sanitary* means *relating to health.*[1] When we speak of the sanitary condition of a town, we include a description of those circumstances which relate to, or have an effect upon, the health of its inhabitants. When applied to the inhabitants of a town or district, in their social capacity, it relates to public health; when to individuals, it relates to personal or private health.

The condition of perfect *public health* requires such laws and regulations, as will secure to man associated in society, the same sanitary enjoyments that he would have as an isolated individual; and as will protect him from injury from any influ-

[1] This word is derived from the Latin *sanitas*, meaning "soundness of body, health." It is sometimes written, erroneously, as we think, sanatory, sanotary, and sanitory. The most correct authors, however, now write, sanitary. *Hygiene* (from a Greek word, derived from Hygeia, the goddess of health, meaning to be well,) is defined "health, the preservation of health, that part of medicine which regards the preservation of health." *Hygiean* and *hygienic* have the same meaning as sanitary. These words are sometimes used as technical terms, especially by medical men; but we dislike, and see no good reason for substituting them for the more simple, proper, and comprehensive English words, health and sanitary, which are generally understood. We would divest our subject of all mystery and professional technicalities; and as it concerns every body, we would adapt it to universal comprehension, and universal application.

ences connected with his locality, his dwelling-house, his occupation, or those of his associates or neighbors, or from any other social causes. It is under the control of public authority, and public administration; and life and health may be saved or lost, and they are actually saved or lost, as this authority is wisely or unwisely exercised.

The condition of perfect *personal health* requires the perfect formation of all the organs of the body, and the perfect performance of each of their functions, in harmony with all the others. Such a condition gives to its possessor, strength, energy, power, buoyancy of spirit, happiness. *Disease* may be an imperfection in some organ, or a derangement or improper action in some function, or both: and it may exist, and does actually exist, in all communities, in an infinite number of degrees, from the slightest deviation from a standard of perfect health, through all the varieties of sickness, to the lowest standard of vitality, just as the body is about to perform its last respiration. Such a condition gives to its possessor, weakness, lassitude, inability, depression, pain, misery, death. And one or the other of these conditions may be chosen, and is actually chosen, to a greater or less extent, by almost every human being.

We believe *that the conditions of perfect health, either public or personal, are seldom or never attained, though attainable;—that the average length of human life may be very much extended, and its physical power greatly augmented;—that in every year, within this Commonwealth, thousands of lives are lost which might have been saved;—that tens of thousands of cases of sickness occur, which might have been prevented;—that a vast amount of unnecessarily impaired health, and physical debility exists among those not actually confined by sickness;—that these preventable evils require an enormous expenditure and loss of money, and impose upon the people unnumbered and immeasurable calamities, pecuniary, social, physical, mental, and moral, which might be avoided;—that means exist, within our reach, for their mitigation or removal;—and that measures for prevention will effect infinitely more, than remedies for the cure of disease.*

Some of the reasons for this belief will be given in the pages of this report. If it shall appear that it is well founded, —if, indeed, there are facts to support, and legitimate arguments to sustain it,—what subject, it may be asked, can come up for consideration, that shall transcend it in importance? We look upon things as valuable, that are worthless without life, and that cannot be enjoyed without health. How much more valuable, then, the means to possess and to enjoy both life and health, which alone give value to other objects! When compared together, all other matters this side the grave dwindle into insignificance.

But whom does this great matter of public health concern? By whom is this subject to be surveyed, analyzed, and practically applied? And who are to be benefited by this application? Some will answer, the physician, certainly. True, but only in a degree; not mainly. It will assist him to learn the causes of disease; but it will be infinitely more valuable to the whole people, to teach them how to prevent disease, and to live without being sick. This is a blessing which cannot be measured by money value. The people are principally concerned, and on them must depend, in part, at least, the introduction and progress of sanitary measures.

An eminent physician has recently said: "Our education has made our calling exclusively a curative, and not a conservative one, and the business of our responsible lives has confined us to it. Our thoughts are devoted to, our interests are concerned in, and our employments are connected solely with, sickness, debility, or injury,—with diminution of life in some of its forms. But with health, with fullness of unalloyed, unimpaired life, we, professionally, have nothing to do."[1] Though this may generally be true, professionally, yet the intelligent physician "can see arrows of disease, invisible to any one else; watch their havoc, and know whence they come, and how they may be stayed;" and there are many eminent medical men, who have, as individuals, nobly used the means which their superior position and knowledge have placed within their control, in the prevention of disease, and in the promotion of

[1] Dr. Edward Jarvis: Communications, Mass. Medical Society, Vol. VIII, p. 1.

public health. And we wish to increase the number of such professional men. We would not, however, confine it to them. We would not make it the object of any one profession exclusively.[1] We would bespeak the attention of intelligent men of all classes and all professions, whatever their prejudices or opinions may have been, to a candid consideration of the whole subject; and if found worthy, would solicit their coöperation and assistance, in its practical application and its onward progress.

"Ignorant men," says Dr. Simon, "may sneer at the pretensions of sanitary science; weak and timorous men may hesitate to commit themselves to its principles, so large in their application; selfish men may shrink from the labor of change, which its recognition must entail; and wicked men may turn indifferently from considering that which concerns the health and happiness of millions of their fellow-creatures; but in the great objects which it proposes to itself, in the immense amelioration which it proffers to the physical, social, and, indirectly, to the moral condition of an immense majority of our fellow-creatures, it transcends the importance of all other sciences; and, in its beneficent operation, seems to embody the spirit, and to fulfil the intentions, of practical Christianity."[2]

In a subject of such vast importance, on which so little is generally known, and so much ought to be universally known, and which is so full of interesting and useful illustrations, it is difficult to confine ourselves within the limits of a single report of reasonable length. This great matter cannot, however, be presented so as to be understood, without some detail. And though we shall restrain any inclination to go into minute illustration, yet, in our judgment, it would be unworthy of Massachusetts, under whose authority we act, and it certainly would be unsatisfactory to ourselves, if we failed to make the attempt, at least, to present the subject so that the people of the State

[1] The medical department of the National Institute have said, in the Transactions of the American Medical Association, Vol. I, p. 306, that "they had reasons to know, that the medical profession in this country, as a general rule, has many preconceived prejudices to overcome, in order to prepare it to enter into the inquiry with that spirit of philosophical research, which can alone make its deductions practically useful." We sincerely hope, however, that this prejudice does not extensively exist.

[2] "Report on the Sanitary Condition of the City of London," p. 38, by Dr. John Simon, Officer of Health; presented Nov. 6, 1849. To this valuable report we shall have occasion again to refer.

may know what we mean; so that they may be able, if they choose, to carry our recommendations into practical operation; and so that, if thus applied, they will add to their physical power, and increase their intellectual, social, and personal happiness.[1]

It should be borne in mind, however, that this report is designed to suggest a *plan* for a sanitary survey of the State, and not to contain the survey itself. We were authorized, however, by the resolve, to embrace a statement of such facts and suggestions as we might think proper to illustrate the subject. And as this is, in some respects, a report introductory to other useful information, which may hereafter be diffused, if our recommendations should be adopted, it has seemed to us that it would be instructive and proper here, to make a general survey of what has been suggested, and what has already been done on the subject, *abroad* and at *home*. Without such a view, we cannot wisely form a plan for our own guidance. We have accordingly been at no inconsiderable labor and expense, to obtain the most recent authentic information concerning the history and present condition of the sanitary movement; and we shall proceed to give some of the results of the investigation, before presenting our plan for a sanitary survey of this State.

I. THE SANITARY MOVEMENT ABROAD.

The sanitary movement goes back to great antiquity, and is traced up to the direct revelation of the Supreme Lawgiver. "In the day that thou eatest thereof thou shalt surely die," may be regarded as the first sanitary as well as moral precept. And from that time, down through the patriarchal ages, there is evidence that the preservation of health was inculcated as one of the primitive duties. The sanitary laws revealed to the Jews, constituted a part of their religion. The regulations for cleanliness, purification, protection from contagious diseases, and for the general preservation of health, are said to have

[1] The valuable Reports of the Commissions, heretofore existing in Massachusetts, are of considerable length. That on *Insects* contains 460 pages; that on *Invertebrata*, 374 pages; that on *Fishes, Reptiles*, and *Birds*, 416 pages; and that on *Trees* and *Shrubs*, 547 pages; besides illustrative plates in each. The first of these reports has been ordered to be reprinted this year. It would be reasonable to suppose that MAN was entitled to a consideration equal to either of these subjects.

been well adapted to the country in which they lived, and are still observed by the Arabs in that climate.

The advantages of public health were known in many of the cities of Greece, at the height of her civilization. The Spartans paid great attention to the physical education of young men and young women, and trained them to temperance, sobriety, and athletic exercises. Plato and Aristotle thought that no city could exist, without health officers; and Epaminondas, Demosthenes, and Plutarch, served in that capacity. Hippocrates, "the Father of Medicine," considered a knowledge of the causes of disease essential to the physician. When asked, "Who is the physician that is an honor to his profession?" he replied, "He who has merited the esteem and confidence of the public, by profound knowledge, long experience, consummate integrity; who has been led through the whole circle of the sciences; who has a due regard to the seasons of the year, and the diseases which they are observed to produce,—to the states of the wind peculiar to each country, and the qualities of its waters; who marks carefully the localities of towns, and of the surrounding country, whether they are low or high, hot or cold, wet or dry; who, moreover, neglects not to mark the diet and regimen of the inhabitants, and, in a word, all the causes that may produce disorder in the animal economy."[1] In conformity with the above observations, he spent a great part of his life in exploring the islands of the Grecian seas, and of the Archipelago, in relation to the subject of the health of the inhabitants. His life was spent in tracing nature, and in observing and recording facts, as interpreted by her. Hence the immortality stamped upon his name and writings.

"But the Romans were the most sagacious and extensive legislators in such matters. They were in many things masters of the practical; and have left vestiges still pregnant with the wisdom of experience. With them, nothing seems to have been deemed 'common or unclean' that could protect the public health. We find Pliny writing to Trajan about a fetid stream passing through Amastris, as if it were an affair of state.

[1] Boston Medical Journal, Vol. XV, p. 197. See also "Traité de la Salubrité," p. 14.

The cloacæ of the Tarquins are still among the architectural wonders of the world. The censors, ediles, and curators, who at different periods had charge of the buildings, and of the apparatus for the removal of impurities, were invested with great powers for the execution of their functions, and derived a corresponding dignity from them. The arrangements for supplying the houses of Rome with water were most minute. Those for ventilation and drainage, still traceable in the several remains of Roman amphitheatres, have struck our most advanced sanitarians with surprise at their remarkable adaptation to their purpose; while Mr. Chadwick tells the commissioners of sewers that he has lately received from a friend in Zurich a specimen of exactly such an earthenware pipe as he is now recommending for the distribution of sewage. It had been laid down by the Romans, and 'has worked until recent times under 500 feet of pressure!' Indeed, it is easy to see from Vitruvius, and from portions of the collection of Grævius, that the rules and operations for the protection of health in Rome, were of a very radical and peremptory character, and allowed no minor interests to interfere with them. It seems to have been a rule with them, that from the time when the foundation of a city was laid, to that of the summit of its greatness, no structural operation, public or private, should be permitted to take a shape which might render it a harbor either for disease or crime; and it is to this vigilant forethought that, in the absence of other organising agencies discovered only in our later times, we may attribute the success with which that remarkable people preserved social order, throughout so dense and vast a mass of human beings as the inhabitants of the imperial city in the days of its greatness."[1]

The cause of public health received a fatal check, when Rome fell. What was previously known, perished on the invasion of the barbarians, and in the general wreck of civilization. Some dietetic precepts, derived from the Greeks and Romans, were retained, but they were devoid of practical utility. It does not appear that any sanitary regulations existed, from the seventh to the fourteenth centuries. In those dark ages, the

[1] Edinburgh Review, Vol. XCI, for January and April, 1850, pp. 214, 405.

people lived without rule of any kind; and consequently, frightful epidemics often appeared, to desolate the land. Although so ancient, few subjects have since made so slow and so little progress, as the science of public health.

In France, in 1350, King John II established the first *Sanitary Police*;[1] and this has been considered the commencement of sanitary reform. The ordinance provided, that hogs should not be kept in cities; that streets should be cleansed, and the offal removed; that butchers should not sell meat more than two days old in winter, and one and a half in summer; and that fish should be sold the same day they were caught. Ordinances in 1486 and 1497, excluded potteries from the centre of Paris. Soap is said to have been unknown, until the fifteenth century. In 1567, and at later periods, tan-yards, dye-houses, and like establishments, were required to be located out of the towns, and near the water. Henry IV quieted the people of Paris, who were alarmed at the use of English coal, by obtaining from the physicians a declaration that no harm could come of it. L. Reyn consulted the physicians on the manufacture of bread. Instructions were given, but unfortunately they were not carried out. The greatest number of houses, in cities, had no privies, in the sixteenth century. The ancient parts of cities show that the streets were narrow and crooked, and the houses low, damp, and without light or air. Paving and lighting the streets are modern inventions. The last part of the

[1] There are three terms which are sometimes used, when speaking of public health,—1. Industrial Police; 2. Sanitary Police; and 3. Medical Police,—which it may be proper to define.

1. By *Industrial Police* is meant, the laws and regulations concerning the occupations of the people. Under it are included regulations for the location, and for preventing the location, of healthy or unhealthy trades; the hours of labor, &c., and the officers and agents by which they are controlled.

2. By *Sanitary Police* is meant, laws and regulations for the *prevention* of disease, and promotion of health. Under it are included the laws establishing, and the regulations of, boards of health; regulations for cleansing and purifying cities, villages, and private establishments; removal of nuisances, burying the dead, &c.; and the officers or agents by which these matters are carried forward.

3. By *Medical Police* is meant, laws and regulations for the *cure* of disease. Under it are included laws prescribing the qualifications and duties of physicians, apothecaries, midwives, &c.; the regulations for their own government among themselves; and the officers and agencies by which they are controlled.

Industrial, sanitary, and medical police, exist in nearly all the governments on the continent of Europe, and will be illustrated to some extent in this report. Those who wish more particular information on these matters, are referred to the lists of books and articles in the appendix; and also to the German work, "FRANK (*Johann Peter*) System einer vollstæn-digen medicinischen Polizey:" Complete System of Medical Police, 6 vols., 8vo;—to an article on Medical Police, in the Westminster Review, Vol. XLV, for 1846, p. 56; and to the works there reviewed. Also, Transactions Am. Med. Association, Vol. II, p. 326.

eighteenth century wrought some improvements, but public health did not become a well-ordered measure, until the commencement of the nineteenth century.

The first permanent "Conseil de Salubrité,"—Council of Health,—designed especially for the city of Paris, was established by Dubois, the Prefect of the Police, on the 6th July, 1802, and was modified by new decrees in 1810 and 1815. The services of this council are rendered gratuitously, yet it has been considered a great honor to belong to it.[1] It was at first composed of four members,—MM. Deyeux, Parmentier, Huzard, senior, and Cadet-Gassicourt. It has since been increased to twenty-four, besides the president and secretary.

In 1803, M. Thouret was called to the council; afterwards, in 1807, Leroux and Dupuytren; in 1810, M. Pariset replaced M. Thouret, and it was at the same period that the nomination of Dr. Petit took place. From that time, the men of the greatest consideration sought to have a part in the labors of the "Conseil de Salubrité." Thus we see enter successively, M. d'Arcet, in 1813; M. Marc, in 1815; M. Berard, in 1817; the engineer Girard, and Huzard, junior, in 1819; Pelletier and Juge, in 1821; M. Gautier de Claubry, and M. Parent-Duchâtelet, in 1825; MM. Adelon, Andral, junior, Barruel, and Labarraque, in 1828; Dr. Esquirol in 1829; afterwards MM. Payen and Boussingault, members of the institute; Dr. Flandin; M. Begin, member of the council of health for the army; and M. Bruzand, architect; and other great men of the nation. MM. Deyeux, Parmentier, Huzard, senior, Cadet-Gassicourt, Thouret, Leroux, Dupuytren, Marc, Girard, Parent-Duchâtelet, Barruel, Esquirol, Pelletier, de Larrey, de Bouillon-Lagrange, de D'Arcet, d'Olivier, (d'Angers,) de Rohault de Fleury, no longer live to direct the labors of the council, and contribute their long experience and indefatigable activity.

This council is merely consultative. Its advice, in all matters submitted to it, is considered and acted upon by the administration. Its labors and decisions are, however, held in so high estimation, that they are seldom if ever reversed. Their reports

[1] See Traité de la Salubrité, pp. 23 and 25; also, pp. 319–359, where the ordinances appear. Annales d' Hygiène publique, tome I, p. 13.

were published annually, until 1828, when they were discontinued. In 1840, a general report of their labors for the eleven years, 1828–1839, was published; and, in 1847, another report for the six years, 1840–1845.

During the first period 4431 reports, and during the last period 3087 reports, were made to the administration on the numerous questions which it submitted to the council. This is an average of over eight reports weekly, during the whole periods. And many of these reports required much scientific investigation, and great labor to prepare them. From these facts some idea may be formed of the immense amount of gratuitous service which has been performed by this council.[1]

These reports relate to three great divisions,—*health*, *salubrity*, and *industry*. Under *health* are classed, among other things, the researches on the adulteration of food, on the vessels used in its preparation, on the precautions to be taken with respect to the vessels and utensils of copper, regard being had to the uses for which they are employed; the experiments on the adulteration of salts, on the adulteration of bread and of flour by different substances, on the poisonous substances employed to color bonbons, liqueurs, &c.; the examination of the methods employed in preparing pork; the examination of the water used for drink; the adulteration of the flours of linseed and mustard; the use of meat of animals which had died of disease; the researches into the salubrity of dwellings. The head of *salubrity* comprises the anatomical theatres, their construction, the means of remedying the causes of the unhealthiness which these establishments present; the discharge of sulphurous waters from the public baths, the utility of street fountains, the inspection of barracks, and the sanitary measures to which they should be subject; the improvements to be made in the fires of the establishments which employ coals; the arrangements to be made for the deposit of filth in the rural districts; the purification of sewers; the supply of water for domestic and industrial purposes; the steps to be taken in

[1] These reports appear under the title, "Report généraux des Travaux du Conseil de Salubrité, pendant les Annes 1829 à 1839 inclusivement." Abstracts of these reports were published in the Annales d' Hygiéne publique, tome XXV, p. 61, and XXXVIII, p. 79. A translation of the former is published in the Report on the Sanitary Condition of the Laboring Population of Great Britain, p. 409.

exhumations; the examination of different contrivances to empty privies, the ameliorations to be introduced into this portion of service; the wholesomeness of the markets, the inspection of prisons. The reports which relate to *industry* principally treat of the construction of slaughter-houses; the condensation of the gas and vapors resulting from the refining of metals; the fabrication, preservation, and sale of fulminating and lucifer matches; the precautions to be taken in the construction of fulminating powder-mills, and in the manipulation of the substances employed there; the measures to be taken for the conveyance of the fulminate of mercury; the researches into the employment of bitumens, and the conditions to be prescribed to the makers; the making of wax candles; the conditions to be imposed on catgut factories; the researches on the fires of wash-houses, and on the necessity of decomposing the soapy water to prevent putrefaction; the sanitary measures applicable to white-lead manufactories, and the researches on the diseases of the workmen; the propositions of classification for different trades, such as the silk hat factories, the forges, the places for making and keeping ether; and the beating of carpets.

Thus health, salubrity, industry, offer to the "Conseil de Salubrité" a vast field of researches and investigations, and we may affirm that there is no question relating to these three great departments of the administration, which they have not profoundly meditated, and in part resolved. If now we turn to other subjects, we still find important labors which touch in several points on the different matters of which we have just spoken, but which have not, like them, a special and clearly defined character: such are the reports on epidemics and smallpox; the measures to be taken to prevent or combat them; the *epizooties* that have prevailed at different epochs among several species of animals, and particularly among milking cows; the sale of horses with glanders, and the regulations to which they should be subject, as well as other animals seized with contagious diseases; the measures to be taken against rabid dogs, and the precautions in case of bites from these animals; the modelling, examination, and embalming of corpses; the aids to be

afforded to the drowned and suffocated; the measures to be taken to ascertain the number of these accidents, as well as of suicides; the compilation of a new nomenclature of diseases and causes of death; the measures to be taken to prevent fires in theatres, and various other matters.

"The law has divided manufactures into three classes, each being annoying and insalubrious in different degrees. Those of the first class are not permitted at all near dwellings, and can only be established by a royal ordinance, issued by the Conseil d'Etat. In this category are included manufactories of the nitric, sulphuric, and hydrochloric acids, and of lee-ashes; melting establishments using a naked fire; workshops for the preparation of taffetas and varnished tissues; the premises of knackers, tripemen, and catgut manufacturers; those also in which are prepared animal black, glue, Prussian blue, blood manures, 'orseille,' (a kind of dye,) and starch; and factories of phosphorus and lucifer matches, or fulminating compounds. The reasons for placing these in the first class is the danger of fire, their actual injuriousness to health, or the intolerably fetid odors which they emit, although not actually noxious. They can only be established after prolonged and numerous formalities. The demand for permission to do so is first addressed to the prefect, and is then posted, by order of the communal mayors, in those places situated within a radius of six kilometres (about 13,000 feet) round the proposed locality. It remains posted for one month, and during this period the mayor receives objections, and enters them in a special register. The local authorities then draw up a report *de commodo et incommodo*, and transmit all the documents to the prefect. The prefect transmits the file of papers to the Council of Health, which appoints a commission of inquiry to visit the spot and hear the objections; their report on the facts is then discussed by the council, and it afterwards returns all the documents to the prefect, with its opinion as to the propriety of granting or not granting the required permission. If there be an opposition to this permission, as is ordinarily the case, the matter is referred to the council of the prefecture. The opinion of the latter is not a judgment, against which the condemned manufacture has

no appeal; it is communicated to the proprietor, who may either desist or persist in his speculation; if the latter, all the documents are referred to the Minister of Commerce, and a royal ordinance is granted or withheld. If withheld, and the manufacturer have already constructed his premises, he is required to pull them down, or not to use them for the purpose intended: this often occurs.

"The second class of manufacturing establishments comprises those, of which the removal from an inhabited locality is not strictly necessary, but which can only be permitted after it has been clearly shown that no process will be adopted in them which will either inconvenience or injure the neighboring holders of property. Lime or plaster kilns, high pressure steam engines, gas-works, tanneries, foundries, hat factories, manufactories of sulphate of iron and zinc, of sulphate of soda in close vessels, of phosphorus, of imitation trinkets, bituminous mastic, chandleries, whether for tallow or composition candles, and workshops for cleansing verdigris from copper, are all in this category.

"None of these are actually injurious to the health, but many are disagreeable, and annoy either with smoke, noise, stench, or the danger of fire. The demand for permission to establish any one of them is addressed to the prefect or vice-prefect, who transmits it to the mayor of the commune, that he may make an inquiry *de commodo et incommodo.* The Council of Health then gives its opinion, as in the preceding class, and the prefect issues his decree. If permission is refused, the applicant can appeal to the council of the prefecture, and from thence he can go to the Conseil d'Etat. The same course is open to the opponents.

"The third class comprises lime-kilns that are in operation one month only in a year, potteries, brick and tile works, manufactories of gelatine and isinglass, crucible foundries, dye-works, &c. The method of obtaining permission is the same as in the second class. They are sanctioned near habitations, but are subject to the inspection of the prefect who grants the permit."[1]

[1] British and Foreign Medico-Chirurgical Review, Vol. I, for 1848, p. 364.

Councils of Health, similar to that of Paris, were established in Nantes in 1817; in Bordeaux soon after; in Lyons in 1822; in Marseilles in 1825; in Lisle in 1828; in Rouen in 1831; and other large cities followed their example.

The important results derived from the investigation of these councils stimulated the labors of private individuals, and very many important works have been published on the subject. In consequence of these works, and of the example of England and other governments in the cause of public health, the "Conseil d'Etat" passed an ordinance, on the 18th December, 1848, for a general health regulation throughout the French Republic.

France is divided into 86 departments, and subdivided into 363 arrondisments, 2,834 cantons, and 37,187 communes, bearing some resemblance to our counties, towns, and districts. Each department is governed by a *Prefect*, each arrondisment is superintended by a sub-prefect, and each commune by a mayor or other magistrate.

The health ordinance provides that there shall be in each arrondisment a Council of Public Health; the members to consist of not less than seven, nor more than fifteen persons. An order drawn up by the Minister of Agriculture and of Commerce regulates the number of the members and the composition of each council. The members of each council of health of an arrondisment are nominated for four years by the prefect, one-half removable every two years. Commissions of public health may be instituted in the chief towns of a canton, by a special order of the prefect, after having consulted the council of an arrondisment. There must be a council of public health in each department, and located in the chief towns of a prefecture; the number of members to be the same as above, and holding their office for the same periods. These councils of health are presided over by the prefect or sub-prefect, and the commissioners of a canton by the mayor of the chief town. Each council has a vice-president and secretary, who hold their offices for two years. The boards of health and commissions hold joint meetings at least once every three months, and whenever they are convoked by the proper authorities. The members of com-

missions of health of a canton may be called to attend meetings of the council of health of an arrondisment, where their voice is merely advisory. If a member of the boards, or of the commissions of a canton, absent himself from three consecutive meetings, without assigning reasons that are approved by the prefect, he is considered as dismissed.

The council of health of an arrondisment are charged with the examination of all questions relative to the public health which may be submitted to them by the prefect or sub-prefect, and they have special charge of the following subjects:—the sanitary regulations of localities and habitations, taking measures to prevent and to control endemic, epidemic, and contagious diseases; epizooties and diseases of animals; the propagation of the vaccine disease; the organization and distribution of medical aid to the sick poor; to furnish means to alleviate the sanitary condition of the laboring and agricultural population; to protect the health of workmen; to provide for the salubrity of workshops, schools, hospitals, lunatic asylums, almshouses, and charitable establishments, barracks, arsenals, prisons, asylums, etc., etc.; to decide questions relative to foundlings; the quality of foods, drinks, condiments, and medicines known to commerce; the amelioration or improvement of establishments of mineral waters belonging to the state, to the departments, to communes, or to individuals, and to provide means to render their use accessible to the sick poor; the abatement by requisition of dangerous, unhealthy, or inconvenient establishments; great works of public utility, the construction of edifices, schools, prisons, barracks, harbors, canals, reservoirs, fountains, markets; the establishment of market places, ponds for soaking hemp, sinks, sewers, cemeteries, butchers' stalls, etc., etc. All these matters are to come under the organization of councils of health.

The council of health of an arrondisment is to combine and arrange documents relating to mortality and its causes, with the topography and statistics of the arrondisment touching the public health. Reports are to be made regularly to the prefect, who must transmit a copy to the Minister of Agriculture and of Commerce. It is made the duty of the respective coun-

cils of health of each department to give advice upon all questions of public health that may be submitted to them by the prefect, upon all questions common to the general arrondisment, or relating to an entire department. It is their duty also to condense and arrange the reports made to them by the council of health of the different arrondisments, at the request of the prefect. This report is immediately transmitted by the prefect, with the accompanying reports and documents, to the Minister of Agriculture and Commerce.[1] The city of Paris has special regulations for the protection of the public health.

In the German and Prussian States, systems of sanitary and medical police exist in greater perfection, and have been applied more extensively to society, than in any other parts of the world. They are under the control of government, and especially the Home Secretary or Minister of the Interior, by means of a central medical department, the director of which is a kind of under-secretary of state. This department consists of three physicians, two apothecaries, and two veterinary surgeons. A registrar and library are attached to it, the latter containing, among other documents, copies of the laws relating to sanitary or medical police by foreign governments. Besides these there is a scientific council of health, composed of those practitioners who have attained to professional eminence, whose duty it is to advise the Executive. Subordinate to these are provincial boards and councils, the director of which, termed *medicinal rath*, superintends the medical police of his province, and is assisted by the medical superintendent (*kreis-physici*) of districts, corresponding to our counties.

It is the duty of the medical superintendents to report to the medical council, quarterly, meteorological observations; the state and prospects of the crops; the epidemic constitution of each quarter, and the prevailing epidemic; suggestions for improvements in the ordinances relating to his duties; prove actions for offences against medical laws, or for quackery; and the veterinary practice of the quarter. A yearly return of all medical practitioners, midwives, apothecaries, veterinary surgeons, persons vaccinated, state of the apothecaries' shops, &c., is made

[1] Annuaire Médical et Pharmaceutique de la France, annie 1849, p. 60.

to the secretary of state. The medical superintendent must pass an examination in state medicine, and be approved as a physician, surgeon, and veterinary surgeon. He must reside in the centre of his district, and cannot be absent without leave of the provincial board. He has to inspect the profession within his district; see that surgeons and midwives do not overstep their proper line of practice; look after quacks; inspect the shops of apothecaries; superintend the medical topography of his district; the pauper medical relief, public hospitals, baths, schools, prisons, &c., in relation to their sanitary condition. He must attend to sudden accidents, and assist surgically, or procure assistance, and make *post-mortem* examinations, and give evidence at inquests. He has under him a district surgeon, to act as his assistant or deputy. They each have an official seal. To each provincial executive is attached a council of health, whose duties, like those of the central council, are to advise the executive, and to act as a board of examiners for the province.[1]

In all the governments on the continent of Europe, laws exist by which every birth, every marriage, and every death, which takes place, is recorded. These records are compulsory and universal. In every case of death, too, the body is inspected by an authorized medical officer, generally appointed by government, who certifies the cause of death. The practice varies in different places. The following are the regulations in Hamburgh, communicated to us by Dr. Schroeder of that city:—

"1. A certificate of a physician on the actual and natural death of any one that is to be buried, must be delivered at all the churches and chapels of the city, at the foreign religious chapels, and at the Jewish synagogue, before they will be allowed to give the permission for burial. This certificate contains a formula, which must specify the name, residence, age, day of death, and disease of which the person died, and its duration. Without such certificate no permission of burial is given in any case.

"2. No physician is permitted to give this certificate, other-

[1] See article on Medical Police; Westminster Review, Vol. XLV, for 1846, p. 72.

wise than on the most convincing signs of death, and on finding no trace whatever of an unnatural cause. In case of doubt of the actual death, the physician must immediately apply all means for restoring life, and immediately inform the police officers, if the relatives refuse the required assistance. It is also made his duty to give speedy information, on heavy responsibilities, whenever he finds traces of an unnatural death.

"3. An inquest is held gratuitously on all those who have died without the treatment of a physician, or who, in cases of sudden death, have not been found alive by the physician called in, either by the magistrate, surgeon, or by one of the members of the council of health, who are appointed to this office for a stated time, and whose names are duly published.

"4. In the poorhouses and hospitals this certificate is given by the resident physicians. The physician of the poor of the pauper district gives it to those who enjoy the out-door privilege of these institutions.

"5. In the principal hospital, a list is made up weekly, by the resident physician, of those that have died within the week, with their names, ages, and last diseases.

"6. All these certificates are collected on Mondays, Wednesdays, and Saturdays, by the messenger of the council of health, from the different presiding officers of the churches, and the other proper authorities, and are immediately carried to the city physician. If he should think it necessary, on account of a deficiency in the certificate, or from any other reason, to examine the corpse himself, nobody can refuse him this examination, which is done gratuitously, under heavy penalties.

"7. The city physician presents an abstract of these certificates every month, and in dangerous cases immediately, specifying the numbers, names, sexes, ages, and causes of death of those that died within the month. At the end of the year an exact list of all the buried is handed in to the police officer by the proper authorities, and by him handed to the city physician, who from it prepares and publishes in the newspapers a general report.

"Every citizen and inhabitant is urged conscientiously to conform to this regulation, since, beside the advantages in a scien-

tific view, it is the only means to avoid the interment of living bodies, and prevent secret murders; and the only way to discover, seasonably, contagious diseases.

"Besides the monthly reports of the city physician on the mortality in the city and the suburbs, the president for the time being of the physicians for the poor, exhibits every three months an exact list of the newly-received sick, distinguishing their diseases, taken from the sick lists of the physicians for the poor, together with the reports of these physicians on the same."

One of the most interesting points connected with the excellent system of registration in Geneva, is the mode of establishing the accuracy of the details concerning mortality, which serve as the basis of the reports. The deaths, without any exceptions, are all certified to, not only by the attendant physicians, but those specially appointed to this duty by the health office. By these, notes more or less extended are made out in regard to the deceased, and the morbid or accidental causes which led to death. These notes are examined every fifteen days by a medical board, discussed, and sometimes extended or modified. Even after all this, the note of registration is carried, by a person employed by the council of health, to the attending physician, who adds to it all the information of interest to be recorded.[1]

"In Paris and Munich, the verification must in every instance be made by public officers, who are generally medical men in practice, and who receive a fee for each verification. At Leipzig, the duty is performed by the regular medical attendant of the family, if there be one, but if the decease has taken place without a medical man having been in attendance, the verification must be made by the public officer. At Berlin and Frankfort, the certificate is filled up by the family attendant.

"Where there are regularly appointed verificators, the districts of the city are divided between them; and as soon as death takes place, the fact must be communicated to the district verificator, who proceeds to the house, and signs the certificate after making the necessary examination.

[1] D'Espine—"Annuaire de la Mortalité Genevoise," p. 4.

"The instructions under which these officers act are of a very stringent character, and the procedure is intended to obviate premature interment, and to detect crime.

"The French and German methods of verification are intended to be *preventive.* A number of instances were mentioned to us, in which crimes, which would otherwise have escaped notice, were detected by the keen and practised eye of the verificator, and the general opinion certainly was that much crime was prevented. We heard of no cases of that cold, calculating destruction of successive members of the same family, which has disclosed itself in England. Such a succession of murders, or the poisoning of children, or allowing them to die from neglect, in order to obtain the burial-money from a club in which they were insured, or from other causes, too frequently pass unnoticed, but under the system of verification they could hardly escape being brought under judicial inquiry, and crime might possibly be diminished by a knowledge of the certainty of its discovery."[1]

In Great Britain, the sanitary welfare and improvement of the people seems to have attracted very little attention until within the last twenty-five years. Boards of health had existed in many cities, but they were generally void of much vitality. The report from the select committee of the House of Commons, on the laws relating to Friendly Societies, was published July 5, 1825; and a second report on the same subject, June 29, 1827. In the Westminster Review for April, 1828, there appeared an able article on the matters suggested in these reports, the object of which was "to exhibit the present state of the information possessed relative to the casualties of sickness and mortality, and the conduct of the government respecting the departments of the public expenditure appropriated as means to diminish the evil effects of these casualties." These works have been considered as the dawning twilight of sanitary improvement.

The review was written by Edwin Chadwick, Esq., of the Inner Temple, barrister-at-law, the individual to whom, perhaps, more than to any other, the cause is indebted. A leading

[1] Chadwick's Report on a General Scheme for Extramural Sepulture, p. 171.

London periodical, of December, 1849, has described him as then "a student at law in the Temple. He was not a man of varied or profound attainments, nor distinguished by any extraordinary brilliancy of intellect. But he was remarkable for his sagacity in extracting from masses of detail the master facts, and bringing these to bear for the elucidation of a master thought. He would confront, undaunted, any amount of intellectual labor; exploring mountains of blue books and statistical returns, till he had fully ascertained and brought to light their true riches. For some years his peculiar powers had been wasted on sifting evidence in private cases for attorneys. But in 1828, a slight incident threw the idea of which we have spoken across his track. He seized it, and it became the ruling thought of his life." His name should be handed down to posterity as one of the greatest and most useful reformers of his age.

Dr. T. Southwood Smith, Professor in the London Fever Hospital,—another individual who has been prominent in all the sanitary movements, and to whom the world is greatly indebted,—called the public attention to the causes of fever, in his treatise on that subject, in 1830; and subsequently published a valuable work on the Philosophy of Health. He was appointed, in 1832, by Lord Melbourne, in conjunction with Mr. Took and Mr. Chadwick, to investigate the question of factory labor, which Lord Ashley and Mr. Sadler had at that time pressed upon public attention. This resulted in the appointment of Factory Inspectors.

In 1832, a commission of nine persons was appointed to inquire into the practical operation of the laws for the relief of the poor in England and Wales. Mr. Chadwick was one of this commission. Their report was the basis of "An Act for the Amendment and better Administration of the Laws relating to the Poor in England and Wales," which was passed, August 14, 1834. That act placed the whole pauper system under the management of three commissioners and a principal secretary. Rt. Hon. Thomas Faulkland Lewis, John George Shaw Le Fever, Esq., and George Nichols, Esq., were immediately appointed commissioners, and Edwin Chadwick, Esq., secretary.

He is the author of most of the able papers which have appeared in the fifteen annual reports made since that time. These important documents exhibit one-fourth of all the pauperism as the result of preventable disease; if so, then is pauperism in itself in a similar degree preventable.

March 28, 1833, a select committee of twenty-seven persons, among whom were John Wilks, Esq., Lord Viscount Morpeth, Sir George Grey, Lord John Russell, the solicitor-general, Col. Davis, and other distinguished men, was appointed by Parliament, "to consider and report on the general state of parochial registers, and the laws relating to them; and on a general registration of births, baptisms, marriages, deaths, and burials, in England and Wales." On the 15th of August succeeding, after a thorough investigation, a full report of the result of their labors was submitted. The conclusions of the committee were,—

"1. That the subject is urgently important:

"2. That it involves matters of great public and national interest, as well as individual satisfaction, and rights and claims to property; and deserves the attention of the humblest artisan, as well as of the most philosophical and statesmanlike inquirer:

"3. That the existing law is imperfect and unjust, and requires not only partial amendment, but real fundamental reform:

"4. That great trouble, vast expense, utter uncertainty, capricious changes, and local and general evils exist, while no means are supplied to obtain the information other countries possess, and justly value, *as to the state of disease, the operation of moral and physical causes on the health of the people*, the progress of the population, and other matters, on which accurate knowledge can scarcely be too highly appreciated or too intensely pursued."

In consequence of the information contained in this report, an "Act for the Registration of Births, Marriages, and Deaths, in England and Wales," was passed June 6, 1836, and went into operation July 1, 1837. This act was brought into Parliament by Lord John Russell, the present Prime Minister of Great Britain, and was advocated by him in a very able speech, in which he said, "It was most desirable that a general system

of civil registration should now be carried into effect. It was a most important subject: important for the security of property; important to ascertain the state and condition of individuals under various circumstances; important to enable the government to acquire a general knowledge of the state of the population of the country, that there should be a general registration of births, marriages, and deaths." Sir Robert Peel, Dr. Bowring, Lord Morpeth, and other distinguished members of Parliament, were also its warm supporters.

Under the operation of this system, a central office was established in London, presided over by an officer styled the Registrar-General of Births, Deaths, and Marriages. England is divided at present into 11 divisions, 623 districts, and 2189 sub-districts. In each district there is a superintendent registrar; and in each sub-district, a registrar. London is divided into 5 divisions,—east, west, north, south, and middle,—36 districts, and 135 sub-districts. Copies of the records of all births, marriages, and deaths, which take place during the preceding week, are made by the registrars of the sub-districts, every Saturday evening, and transmitted every Monday to the superintendent registrars, and by them transmitted to the Registrar-General. An abstract is made of these returns on the same day, and published on Tuesday, and accompanied by remarks on the state of the health and weather during the week. Notwithstanding the greatness of the metropolis, containing over 2,000,000 inhabitants, nearly equal to three times the population of Massachusetts, the returns are made with so great regularity that it seldom happens that a single one is missing. The deaths by each disease are shown, the prevailing epidemics recorded and exhibited, and every one is traced from its origin to its termination. A quarterly report, comprising an abstract of the returns from all the districts of England, is published; and from all these documents an annual report is prepared. Nine annual reports have been published; the first three by T. H. Lester, Esq., the first Registrar-General. Since the death of Mr. Lester, George Graham, Esq., has held the office, and he has made the last six reports. These reports contain a vast fund of information, of the greatest value, relating to the life, the health, and the welfare of man.

This was the most important sanitary measure ever adopted in England; and it has been the foundation of nearly all others. Without it they would have been comparatively of little value. A recent writer says:—

"The first bill of health was the act for the registration of births, marriages, and deaths. Before that time, a perfect chaos, respecting population and mortality, reigned. Since that time, a mass of statistics, relating to life, health, and disease, has been accumulating, which will exert, and is exerting, an immensely beneficial influence upon the physical and moral welfare of the population of these realms, and indeed, ultimately, upon every people upon the face of the globe. The discoveries in astronomy have not a more palpable application to navigation and commerce, nor the investigations in chemistry to manufactures, than have the statistics of health and disease to physical and moral regeneration."[1]

"The Quarterly Reports of the Registrar-General are among the most interesting and instructive documents of the day. They are to us what, in an inferior degree, the Saxon Chronicles were to the 11th and 12th centuries. They engrave, in brief but expressive phrases, the national vicissitudes, prosperities, trials, and calamities. With those faithful and unerring indices, marriages and deaths, the Registrar-General measures the robustness of national vigor, or probes the depth of national suffering. Backed by those ranks of expressive figures, which permit no exaggeration, and are susceptible of no fallacy, he presents to us a true picture of the present condition of our country and nation. No false rhetoric or untrue coloring is suffered to mar the truth of the hard and simple outlines. No political creed conceals the facts, or perverts their meaning. No unjust law orders the distortion of half the truth by the concealment of the other half. These reports are, indeed, something more than current history; they are the judgments of the time upon itself: and, untinctured as they are by party spirit, and unswayed by personal considerations, those judgments are as true and faithful as those of future times can be. It is no objection to the value of these records, to say that they

[1] London Lancet, Vol. II, for 1848, p. 457.

chronicle with greater minuteness and accuracy the national ills and chastisements, than the national happiness and success. The most dreary and painful side of human existence is certainly most largely presented to us. The shadow of imperfection and decay tinges all things with its melancholy hues. Our path is rather through the gloomy valley, and under the shade of cypresses, than on the invigorating mountain side, resplendent with the light of heaven. But this seems to be the necessary result of all true histories of the social condition of a people. That which is strongest and most permanent presses aside that which is less vigorous and enduring. Happiness and comfort escape the chronicler; the gaunt features of misery and distress are ever before him. The happy hours of a nation's, as of an individual's life, are as the sandy ripples which the advancing tide washes into smoothness; the hours of sorrow and of trouble are like those ripples fossilized into stone." [1]

These reports are regarded as of the highest authority. "If there is any one whose information may be supposed to be accurate, whose impartiality may be relied upon, and whose judgment may be trusted, it is the Registrar-General. He is biassed by no theories, and is above the reach of all suspicious leaning." [1]

We have compiled from the Appendix to the Ninth Annual Report of the Registrar-General, (pp. 17, 36, and 70,) the table on pages 34 and 35, to show the rate of mortality among four different populations in England. The first part embraces the whole of England; the second, (District No. 35,) one of the most healthy districts; the third, Liverpool, one of the most unhealthy districts; and the fourth, London. It shows the population, on the night between the 7th and 8th of June, 1841; the deaths for seven years, 1838 to 1844,—three years before and three years after the enumeration; and the average annual mortality per cent. for that period. It also shows the influence of locality, age, and sex, on mortality. This important table will be hereafter referred to, and should be carefully studied and understood.

[1] British and Foreign Medico-Chirurgical Review, Vol. V, 1850, pp. 216, 222.

STATEMENT—1. *Of the Rate of Mortality among the Population, living at different ages in the whole of England, and in the most healthy, and the most unhealthy districts of England.*

[This statement comprises—1. The whole of England; 2. A part of Surrey, embracing the subdistricts of Dorking, Reigate, and Godstone,—numbered 35 in the Registrar-General's Abstract,—among the most healthy districts; and 3. Liverpool, among the most unhealthy districts of England.]

AGES.	POPULATION, JUNE 6–7th, 1841.					
	1. ENGLAND.		2. PART of SURREY.		3. LIVERPOOL.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 1, -	210,341	218,851	444	496	3,365	3,348
1 to 2, -	215,322	214,250	436	465	3,002	2,935
2 to 3, -	218,035	219,006	492	506	2,918	3,022
3 to 4, -	203,492	206,368	436	457	2,685	2,729
4 to 5, -	201,080	200,263	454	424	2,480	2,458
Under 5, -	1,048,270	1,058,738	2,262	2,348	14,450	14,492
5 to 10, -	953,235	952,450	2,113	2,158	10,983	11,245
10 to 15, -	880,907	852,517	1,974	1,848	10,554	10,389
15 to 20, -	1,507,944	1,633,939	4,073	3,039	21,389	25,458
20 to 30, -	1,178,131	1,275,849	3,431	2,568	22,894	23,495
30 to 40, -	871,845	902,863	2,144	1,730	14,777	14,100
40 to 50, -	621,142	653,065	1,435	1,316	7,504	7,841
50 to 60, -	398,937	433,202	976	800	3,738	4,408
60 to 70, -	224,863	259,283	539	520	1,553	2,053
70 to 80, -	86,736	103,707	202	207	435	683
80 to 90, -	12,635	17,906	18	40	59	106
Over 90, -	579	1,091	0	3	3	19
All ages, -	7,785,224	8,144,610	19,167	16,577	108,339	114,289
Deaths in the 7 years, 1838–44.						
Under 1, -	301,378	236,261	426	323	7,155	6,004
1 to 2, -	100,874	95,764	97	82	3,575	3,455
2 to 3, -	53,785	53,449	55	59	1,856	1,743
3 to 4, -	35,826	35,802	46	49	1,172	1,038
4 to 5, -	26,034	25,634	29	35	767	720
Under 5, -	517,897	446,910	653	548	14,525	12,960
5 to 10, -	61,659	59,903	99	99	1,333	1,252
10 to 15, -	31,028	32,662	44	47	466	434
15 to 20, -	84,833	95,152	177	170	1,476	1,407
20 to 30, -	79,703	89,967	152	136	2,030	2,007
30 to 40, -	76,093	78,431	151	115	2,234	1,785
40 to 50, -	77,047	70,680	118	112	1,767	1,448
50 to 60, -	87,539	84,275	156	173	1,387	1,441
60 to 70, -	103,873	106,692	240	206	1,155	1,347
70 to 80, -	87,218	95,723	217	190	631	872
80 to 90, -	26,167	34,497	54	71	133	229
Over 90, -	1,727	3,112	0	9	7	38
All ages, -	1,234,784	1,198,004	2,061	1,876	27,144	25,220

Rate of Mortality, &c.—CONTINUED.

Annual Mortality per Cent.

AGES.	1. ENGLAND.		2. PART OF SURREY.		3. LIVERPOOL.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 1, -	20.510	15.440	13.702	9.296	30.401	25.609
1 to 2, -	6.706	6.393	3.177	2.517	17.027	16.810
2 to 3, -	3.531	3.490	1.597	1.665	9.094	8.237
3 to 4, -	2.520	2.481	1.507	1.531	6.241	5.432
4 to 5, -	1.853	1.831	.912	1.178	4.422	4.183
Under 5, -	7.072	6.037	4.123	3.332	14.372	12.771
5 to 10, -	.926	.900	.669	.655	1.735	1.590
10 to 15, -	.504	.548	.318	.363	.631	.597
15 to 20, -	.805	.833	.621	.799	.987	.789
20 to 30, -	.968	1.009	.633	.756	1.268	1.220
30 to 40, -	1.249	1.242	1.006	.949	2.162	1.808
40 to 50, -	1.776	1.548	1.174	1.215	3.367	2.637
50 to 60, -	3.141	2.782	2.283	3.087	5.305	4.668
60 to 70, -	6.613	5.885	6.359	5.655	10.634	9.370
70 to 80, -	14.394	13.201	15.342	13.103	20.740	18.232
80 to 90, -	29.646	27.553	42.843	25.338	32.230	30.851
Over 90, -	42.697	40.795	-	42.825	33.361	28.561
All ages, -	2.270	2.104	1.536	1.616	3.582	3.151
Living to 1 dth.	44.1	47.5	65.1	61.9	27.9	31.7

2. *Of the Rate of Mortality among the Population of London.*

AGES.	Population, 1841.		Deaths, 7 years, 1838–1844		Annual Mortality, per Ct.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 1,	22,987	24,495	37,617	30,665	23.420	17.905
1 to 2,	22,625	23,245	16,906	16,033	10.694	9.865
2 to 3,	24,927	25,147	9,285	9,082	5.331	5.164
3 to 4,	21,933	23,221	5,997	6,067	3.912	3.737
4 to 5,	20,977	21,184	3,982	3,978	2.717	2.685
Under 5,	113,449	117,292	73,787	65,825	9.309	8.027
5 to 10,	95,653	98,317	8,269	7,867	1.237	1.144
10 to 15,	88,535	89,271	2,982	2,906	.482	.466
15 to 20,	176,825	217,887	9,371	9,435	.759	.619
20 to 30,	167,987	199,973	12,557	12,825	1.070	.917
30 to 40,	121,002	136,253	15,120	13,122	1.788	1.377
40 to 50,	78,369	88,198	14,927	12,341	2.726	2.001
50 to 60,	43,423	51,299	14,604	13,649	4.812	3.805
60 to 70,	20,995	27,882	13,478	15,262	9.185	7.827
70 to 80,	5,982	9,573	7,721	10,823	18.472	16.170
80 to 90,	738	1,478	1,649	3,134	31.995	30.326
Over 90,	49	96	128	269	37.304	39.994
All ages,	913,007	1,037,519	174,593	167,458	2.737	2.308

By examining the first part of this valuable table, and following down the left hand column, it appears that in the whole of England, in 1841, there were 1,048,270 male persons under five years of age, among whom 517,897 males died in the seven years, 1838–1844, or an annual average of 7.072 per cent. And in the second part, following a line across the page, it appears that, in London, in 1841, there were 136,253 females between the ages of thirty and forty, among whom 13,122 females died in the seven years, 1838–1844, or an annual average of 1.377 per cent. And if the part relating to the annual mortality per cent. be examined alone, it appears that in the most healthy districts in England, 4.123 per cent. of the males die under five years of age; while in the most unhealthy, 14.372 per cent. die in the same age. In like manner, other facts may be ascertained, by examining other parts of the table.

In resuming our history of the sanitary movement, it appears that in October, 1835, the Secretary of War instituted an inquiry "into the extent and causes of the sickness and mortality among the troops in the West Indies, with a view of founding thereon such measures as might appear likely to diminish the great loss of life annually experienced in these colonies." The investigation was conducted under the superintendence of Major Alexander M. Tulloch, and in 1838 his report on the subject was published; and it was followed by three other volumes, by the same author, under the following titles:—

Statistical Reports on the Sickness, Mortality and Invaliding among the Troops:—

Vol. I.—The West Indies. Published in 1838.

Vol. II.—The United Kingdom; The Mediterranean; and British America. Published in 1839.

Vol. III.—Western Africa; St. Helena; The Cape of Good Hope; and The Mauritius. Published in 1840.

Vol. IV.—Ceylon; The Tenasserim Provinces; and The Burmese Empire. Published in 1841.

These reports extend over 597 folio pages, and contain a vast mass of facts relating to medical topography and diseases, during the period of 1818 to 1836. They justly attracted great

attention at the time of their first appearance, and are of real permanent value.

In the mean time, in 1836, the Lords Commissioners of the Admiralty issued orders for the preparation of similar documents relating to the navy. Dr. John Wilson was appointed to superintend the work, and his reports appear in two volumes:—

Statistical Reports on the Health of the Navy, for the years 1830, 1831, 1832, 1833, 1834, 1835, and 1836:—

Vol. I.—South American, West Indian, and North American; Mediterranean, and Peninsular Commands. Published in 1840.

Vol. II.—Cape of Good Hope, and West Coast of Africa, and East India Commands; Home, and Various Forces. Published in 1841.

March 12, 1840, a select committee of fifteen members of the House of Commons was appointed "to inquire into the circumstances affecting the health of the inhabitants of large towns and populous districts, with a view to improved sanitary regulations for their benefit." The report was presented, June 17th following, under the title of "Report from the Select Committee on the Health of Towns, together with the minutes of evidence taken before them."

On the 2d of October, 1840, a commission, consisting of Thomas Tooke, Esq., T. Southwood Smith, M. D., Leonard Horner and Robert John Saunders, Esqs., was appointed by the government, to inquire "into the employment of the children of the poorer classes in mines and collieries, and the various branches of trade and manufacture in which numbers of children work together; and to collect information as to the ages at which they are employed, the number of hours they are engaged in work, the time allowed each day for meals, and as to the actual condition and treatment of such children, and as to the effects of such employments, both with regard to their moral and their bodily health." Two reports were made by this commission: one in 1841, on the physical, and the other in 1843, on the moral aspects of the inquiry, comprising five large folio volumes. An abridgement was published in 1843, under the title of "The Physical and Moral Condition of

Children and Young Persons employed in Mines and Manufactures."[1]

In 1838, the Poor-Law Commissioners instituted inquiries into the effects of different methods of managing pauper children; and the results of their inquiry appeared in 1841, in a "Report from the Poor-Law Commissioners on the Training of Pauper Children." This work contains several valuable papers relating to health, as well as education in general.

A "Report on the Prevalence of certain Physical Causes of Fever in the Metropolis, which might be removed by proper Sanitary Measures; by Neil Arnott, M. D., and James Phillips Kay, M. D.," dated 12th May, 1838; and another "Report on some of the Physical Causes of Sickness and Mortality to which the Poor are particularly exposed, and which are capable of removal by Sanitary Regulations; exemplified in the present condition of the Bethnal Green and Whitechapel Districts, as ascertained on a personal inspection by Southwood Smith, M. D., Physician of the London Fever Hospital," dated May, 1838, were published in the Fourth Annual Report of the Poor-Law Commissioners, (8vo. ed., pp. 103, 129,) and also in a separate form. And a "Report on the Prevalence of Fever in Twenty Metropolitan Unions or Parishes, during the year ending the 20th March, 1838, by Southwood Smith, M. D.," was published in the Fifth Annual Report, (p. 160.)

In consequence of these reports, Lord John Russell, then Secretary of the Home Department, on motion of the Bishop of London, addressed a letter to the commissioners, dated August 21, 1839, directing them to inquire "as to the extent to which the causes of disease, stated in these reports to prevail among the laboring classes of the metropolis, prevail also among the laboring classes in other parts of England, Scotland, and Wales." The commissioners began this inquiry through the agency of their secretary, Edwin Chadwick, Esq., in November, 1839; and that distinguished sanitary reformer digested the information obtained; and presented his very able and most valuable report, July 9, 1842, which was published under the

[1] See reviews of these reports in London Quarterly, Vol. LXX, for 1842, p. 160; also, in Westminster, Vol. XXXVIII, for 1842, p. 86.

title, "Report on the Sanitary Condition of the Laboring Population of Great Britain, by Edwin Chadwick, Esq."

In 1843, appeared "A Supplementary Report on the Results of a Special Inquiry into the Practice of Interments in Towns, by Edwin Chadwick, Esq."

March 8, 1842, a select committee of fifteen were appointed, "to consider the expediency of framing some legislative enactment to remedy the evils arising from the interment of bodies within the precincts of large towns, or of places densely populated." They reported the 14th of the succeeding June, under the title of "Report from the Select Committee on Improvement of the Health of Towns."—"Effect of Interment of Bodies in Towns."

The facts thus far developed began to make a profound impression upon the public mind; and Sir Robert Peel, foreseeing their importance, on the 9th May, 1843, appointed another commission, consisting of thirteen gentlemen of eminence, to inquire "into the present state of large towns and populous districts in England and Wales, with reference to the causes of disease among the inhabitants; and into the best means of promoting and securing the public health under the operation of the laws and regulations now in force; and the usages at present prevailing with regard to the drainage of lands, the erection, drainage, and ventilation of buildings; and the supply of water in such towns and districts, whether for purposes of health, or for the better protection of property from fire; and how far the public health and the condition of the poorer classes of the people of this realm, and the salubrity and safety of their dwellings, may be promoted by the amendment of such laws, regulations, and usages."

This commission made their first report, June 22, 1844, and their second report, February 3, 1845. These works contain 1363 folio pages, besides numerous maps, and other pictorial illustrations; embracing an immense mass of facts on the subjects to which they relate. Two editions have been published: one in two volumes, large folio, and the other slightly abridged, in four volumes octavo, under the title of "Reports of the Commissioners for inquiring into the state of Large

Towns and Populous Districts." These reports have been justly characterized as "certainly among the ablest and most comprehensive state papers that ever issued from a government office."

September 24, 1847, another commission, consisting of Lord Robert Grosvenor, Edwin Chadwick, Thos. Southwood Smith, Richard Owen, and Richard Lambert Jones, was appointed to inquire "whether any and what special means may be requisite for the improvement of the health of the metropolis, with reference more particularly to the better house, street, and land drainage; street cleansing and paving; the collection and removal of soil and refuse, and the better supply of water for domestic use, for flushing sewers and drains, and cleansing streets; and also, to the best means of using existing works, and of erecting new works requisite, and of maintaining them in good action; and also, to the most equitable provisions for regulating the charges, or assessing, collecting, and paying the moneys requisite for such purposes, more especially in the districts chiefly inhabited by the poorer classes of the population." They made their first report, November 19, 1847; their second, February 19, 1848; and their third, July 13, 1848. The commission is still open.

The following interesting statement of facts, containing a condensed summary of the information then possessed, is taken from the speech of Lord Morpeth, made in the House of Commons, March 30, 1847, on introducing his "Bill for improving the Health of Towns in England." (pp. 6, 33.)

"By a statement drawn up by Dr. Guy, Physician to King's College Hospital, from the reports of the Registrar-General, it appeared that the relative mortality in the town and country districts was as follows:—

	Country District.	*Town District.*
Population to the square mile,	199	5,100
Annual deaths in 1,000,000,	19,300	27,073
Annual excess in town districts,		7,773
Rate of mortality,	1 in 52	1 in 37

"He also supplies further particulars as to the rate of mortality in different places:—

Isle of Anglesea, . .	1 in 62	Leeds and Birmingham, .	1 in 37
Isle of Wight, . .	" 58	Sheffield, . . .	" 33
England, . . .	" 45	Manchester Union, . .	" 30
London, . . .	" 39	Liverpool (Parish,) . .	" 29

"Thus the inhabitants of London, compared with England at large, lose eight years of their lives; of Liverpool, nineteen. The population of the large towns in England being 4,000,000, the annual loss is between 31,000 and 32,000. But all towns are not necessarily equally unhealthy, as appears by the following statement:—Liverpool, deaths per 1,000, 35; Manchester, 32; Bath, Coventry, Derby, Dudley, Shrewsbury, and Sunderland, 26; Carlisle and Norwich, 25; Halifax and Kidderminster, 21. Now it may be thought that low wages, and the consequent comparatively small command over the necessaries of life, may occasion the greater rate of mortality in certain districts; but I find the following statement, made by a colleague of my own, Lord Ebrington, in a lecture which he delivered at Plymouth: 'The mortality of the southwestern district, which includes Cornwall, Devon, Somerset, Dorset, and Wilts, is only 1 in 52, not 2 per cent.; while that of the northwestern, including Cheshire and Lancashire, is 1 in 37. Now let it not be said that this is owing to extreme poverty and want of the necessaries of life; the condition of the laborers of the west, the badness of their dwellings, the lowness of their wages, the consequent scantiness of their food and clothing, have been the subject of public animadversion. With the exception of the Cornish miners, the condition of the laborers throughout the western counties is described as nearly the same: yet in Wiltshire, the county of lowest wages, the deaths are 1 in 49; in Lancashire, 1 in 36. The average age at death, in 1841, was, in Wiltshire, 35 years; in Lancashire, 22; at Liverpool, 17; that of the laborers in Wiltshire, 35; operatives in Liverpool, 15. At Manchester, in 1836, the average consumption per head of the population, was 105 lbs. of butcher's meat,—about 2 lbs. a week,—exclusive of bacon, pork, fish, and poultry; (what a different average would our county produce!) the average age at death was twenty. The proportion of paupers in the fifteen principal agricultural counties, is 1 in

8; in the twelve principal manufacturing counties, 1 in 13; in Lancashire, 1 in 11: and of the deaths in 3,500,000 of town, and about an equal number of a country population, there were, respectively, in 1838 and 1839 together,—country, 1 in 54.91, of whom above 70 years of age, 20 per cent.; town, 1 in 38.16, of whom above 70, 9 per cent.; all England, 1 in 46.60, of whom above 70, 14 per cent.'

"The following was Dr. Guy's statement of diseases which occasion the excessive mortality in large towns:—'Deaths in 1,000,000, from small-pox, in the country, 500; town, 1,000. From measles, country, 350; town, 900. Scarlet fever, country, 500; town, 1,000. Typhus, country, 1,000; town, 1,250. Epidemic and contagious disorders together, country, 3,400; town, 6,000. (Waste of life in towns, under this head, 2,600 a year.) Diseases of infants: teething, convulsions, water in the head,—country, 1,300; town, 3,500. (Waste of infant life, under this head, 2,200 a year.) Scrofulous diseases and consumptions, country, 3,800; town, 4,600. Total excess of deaths, 5,500 in the 1,000,000. So that there is a waste of 22,000 lives in the 4,000,000 inhabiting large towns.'

"Dr. Guy also said, 'The total number of deaths in England and Wales, during the year 1841, was 343,847, or somewhat less than 1,000 a day. Now this is at the rate of one death in 46 inhabitants. But if, instead of one death in 46 inhabitants, there had been one death in 50 inhabitants, or 2 per cent., no less than 25,407 lives would have been saved. Now all men who have paid any attention to this subject, agree in the opinion that, by proper sanitary measures, it is possible to insure such a state of health among the community at large, that the mortality shall not exceed that proportion. If the sanitary state of the entire country could be raised to the condition of the most healthy counties, so that instead of one death in 46 inhabitants, there should be only one death in 54, we should have an annual saving of no less than 49,349 lives, or about one-seventh of the whole number of deaths! At first sight, it may appear extravagant to represent such an improvement of our sanitary condition as possible; but, when it is recollected that, on the one hand, even our most agricultural counties have

not yet attained to their best sanitary state, and that our large towns have been hitherto almost entirely neglected, and admit of immense improvement,—the attainment, for the whole country, of a sanitary condition represented by one death in 54 inhabitants, is at least within the bounds of possibility.'

"Dr. Southwood Smith said:—'In some localities there was not a single house in which fever had not prevailed, and, in some cases, not a single room in a single house, in which there had not been fever. The districts in which fever prevails, are as familiar to the physicians of the fever hospital, as their own names. In every district in which fever returns frequently, and prevails extensively, there is uniformly a bad drainage, a bad sewerage, a bad supply of water, a bad supply of scavengers, and a consequent accumulation of filth; and I have observed this to be so uniformly and generally the case, that I have been accustomed to express the fact in this way:—If you trace down the fever districts on a map, and then compare that map with the map of the commissioners of sewers, you will find that wherever the commissioners of sewers have not been, there fever is prevalent; and, on the contrary, wherever they have been, there fever is comparatively absent. Some idea may be formed of the evils which our negligence in the matter of sewerage and drainage inflicts, when I tell you that the annual deaths from typhus fever amount to 16,000, and the attacks of this loathsome disease to between 150,000 and 200,000.'

"Further still, Dr. Lyon Playfair calculates that, for one unnecessary death, there are 28 cases of unnecessary sickness; consequently, in our large towns, above 700,000 cases of unnecessary sickness. The same calculations in the metropolis would save 10,000 deaths, and 250,000 cases of unnecessary sickness.

"Then it may be asked whether all parts of our towns are equally subjected to these causes of sickness and death? So far from that being the case, I find, from one of the reports of the Registrar-General, that the metropolis is divided into three groups, of ten districts each, under the title of the healthiest, the medium, and the most unhealthy districts. The result is as follows:—10 healthiest, with an allowance of 202 square yards to each person, have a mortality of 1 in 49; 10 medium,

with an allowance of 102 square yards to each person, have a mortality of 1 in 41; 10 unhealthiest, with an allowance of 32 square yards to each person, have a mortality of 1 in 36. Liverpool—gentry, 1 in 35; working classes, 1 in 15. The Rev. Mr. Clay, of Preston, makes four classes of streets:—Well conditioned, mortality among children under one year, 15 in 100; moderately conditioned, 21 in 100; ill conditioned, 38 in 100; worst conditioned, 44 in 100, or three times as much as the first. I will only refer back to the very last half-year's report, where it appears, from tables prepared by Mr. Chadwick, that, in St. George's Hanover square, the average age at which the gentry die is 45; laborers, 27: St. Giles's and St. George's Bloomsbury—gentry, 40; working classes, 17.

"There are items of expense which may be reckoned to be incurred under the present system, or rather want of system:—Direct attendance on the sick; loss of what they would have earned; premature death of productive contributors to the national wealth; and expenses of premature funerals. Dr. Playfair estimates this loss for Manchester at nearly £1,000,000; Mr. Hawkesley calculates the loss for Nottingham at £300,000; Mr. Clay estimates the loss for Preston at £990,000; Mr. Coulthait takes the loss for Ashton-under-Lyne at £235,000; and Dr. Playfair considers the loss of London to be above £2,500,000; and that of England and Wales little short of £11,000,000; and of the United Kingdom, £20,000,000," or nearly $100,000,000! And this an annual loss!

On the 31st of August, 1848, the great measure which had been brought into Parliament by Lord Morpeth, (now Earl of Carlisle,) became a law, under the title of "An Act for promoting the Public Health." Under this act a General Board of Health has been organized, consisting of the Earl of Carlisle, Lord Ashley, Edwin Chadwick, Esq., and Thomas Southwood Smith, M. D. Henry Austin, Esq., is their secretary.

While these various governmental measures were in progress, the people were not inactive. Public opinion kept ahead of public measures. In November, 1844, an important meeting was held at Exeter Hall, composed of some of the ablest men in the kingdom, which formed the "Metropolitan Health of

Towns Association."[1] April 23, 1845, the Liverpool Health of Towns Association was organized; and soon after, similar associations were formed in the principal towns in England. A monthly periodical work, entitled "The Liverpool Health of Towns Advocate," was commenced Sept. 1, 1845, and continued until July 1, 1847. In November, 1847, the "Journal of Public Health, and Monthly Record of Sanitary Improvement," was commenced in London, and was continued until December, 1849, under the management of the Metropolitan Association. The books, pamphlets, and documents, official and private, which have more recently appeared on the subject, and the different sanitary movements that have been made for the public benefit, are too numerous to be specified. The whole country seems to be interested; and the people, with some few exceptions, view the sanitary question as *The Great Idea of the*

[1] Associations for scientific and benevolent purposes, in England, are generally managed by "committees." The following gentlemen composed the committee of the London Health of Towns Association. Others, equally eminent, in that city and in other parts of the kingdom, are earnestly engaged in the cause :—

"The Most Noble the Marquess of Normanby, K. P., *Chairman.*
Lord Ashley, M. P., *Chairman of Committees.*
The Hon. J. T. Leslie Melville, *Treasurer.*

The Rt. Hon. Earl Lovelace.	The Rev. C. Girdlestone, M. A.	Wm. Janson, Jr., Esq.
The Rt. Hon. Earl of Ellesmere.	The Rev. Edward Pizey, M. A.	John Leslie, Esq.
	The Rev. W. Queckett, M. A.	Stephen Lewis, Esq.
The Rt. Hon. Earl of Radnor.	The Rev. Chancellor Raikes.	John Liddle, Esq.
The Earl of Shelburne, M. P.	The Rev. J. C. Blair Warren.	Charles Lord, Esq.
The Rt. Hon. Earl Fortescue.	C. J. B. Aldis, Esq., M. D.	W. A. Mackinnon, Esq., M.P.
The Rt. Hon. Earl of Carlisle.	Thos. Ansell, Esq., M. D.	John Marshall, Esq.
The Lord Bishop of London.	Richard Aulsebrook, Esq.	Edward Meryon, Esq., M.D.
The Lord Bishop of St. David's.	Matthew Baines, Esq., M. B.	Francis Mosely, Esq.
	A. Barnett, Esq., M. B.	George Offor, Esq.
The Lord Bishop of Norwich.	W. H. Black, Esq.	Frederic Pigou, Esq.
The Lord Bishop of Oxford.	R. A. Carleton, Esq., Waterford.	Jeremiah Pilcher, Esq.
The Right Hon. Lord Robert Grosvenor, M. P.		Henry Rich, Esq., M. P.
	Wm. D. Chowne, M. D.	David Salomons, Esq.
The Lord Ashley, M. P.	Thomas Davidson, Esq.	John Simon, Esq., F. R. S.
The Viscount Ebrington, M. P.	Benj. D'Israeli, Esq., M. P.	Wm. Simpson, Esq.
The Lord John Manners, M. P.	Thomas Dunhill, Esq.	R. A. Slaney, Esq., M. P.
The Lord Dudley Coutts Stuart, M. P.	John Dunlop, Esq.	Jas. Smith, Esq., of Deanston,
	Wm. Ewart, Esq., M. P.	
The Rt. Hon. R. L. Sheil, M.P.	Gen. Charles Richard Fox.	T. Southwood Smith, Esq., M. D.
The Hon. F. Byng.	Charles Gatliff, Esq.	
The Hon. W. F. Cowper, M. P.	Hector Gavin, Esq., M. D.	J. F. South, Esq.
Sir Jas. Clark, Bart., M. D.	Frederick D. Goldsmid, Esq.	John Sutherland, Esq., M. D.
Sir R. Harry Inglis, Bart., M.P.	R. D. Grainger, Esq. F. R. S.	Tom Taylor, Esq.
Sir Wm. Clay, Bart., M. P.	R. Grantham, Esq., F. G. S.	Wm. Tite, Esq., F. R. S.
Sir E. Bulwer Lytton, Bart.	John Gunter, Esq.	Thos. Tooke, Esq., F. R. S.
The Hon. W. Leslie Melville.	Benj. Hawes, Esq., M. P.	John Wm. Tottie, Esq.
Sir Edwin Pearson, F. R. S.	James Heywood, Esq., M. P.	Jos. Toynbee, Esq., F. R. S.
Sir George Stephen.	W. E. Hickson, Esq.	G. S. Wallis, Esq.
The Rev. W. Weldon Champneys, M. A.	W. Henry Hyett, Esq., F.R.S.	Wm. Austin, Esq., *Hon. Sec.*" *Journal of Public Health*, 1849.

The Liverpool Health of Towns Association had the Mayor, the Senior Rector, and the Senior Churchwarden, for *Presidents;* Adam Hodgson, Esq., *Chairman;* Thomas Blackburn, Esq., *Vice-President;* Mr. James H. Macree, *Treasurer;* and Mr. John A. Tinne, and W. H. Duncan, M. D., *Secretaries;* besides the auditors and other officers, and committees.

Age. Able articles have, from time to time, appeared in the leading periodical reviews, miscellaneous as well as medical; and among other newspapers, The Times, and The Morning Chronicle, the leading journals of the world, have been its powerful advocates. The Times, during nearly the whole of last year, teemed with able articles. The Chronicle commenced, on the 18th of October, 1849, three series of most valuable papers on "Labor and the Poor;" one relating to the metropolitan districts, one to the manufacturing districts, and one to the rural districts.

Even the Queen, in her recent speech at the opening of Parliament, recommended the subject to public consideration:—

"In the summer and autumn of the past year, the United Kingdom was again visited by the ravages of the cholera; but Almighty God, in his mercy, was pleased to arrest the progress of mortality, and to stay this fearful pestilence. Her Majesty is persuaded that we shall best evince our gratitude by vigilant precautions against the more obvious causes of sickness, and an enlightened consideration for those who are most exposed to its attacks."

It would be impossible here to give even an analysis of these documents and works. The following are among the many conclusions to which we are led from the information they contain:—

1. *It is proved* that there die annually, in each 100 of the population, of the whole of England, 2.27; of the most healthy district, 1.53; and of the most unhealthy district, 3.58. And that the living to one death are, in these districts, respectively, 44, 65, and 27.

2. *It is proved* "that the various forms of epidemic, contagious, and other diseases, caused, or aggravated, or propagated, by atmospheric impurities, produced by decomposing animal or vegetable substances, by damp and filth, and close and over crowded dwellings, prevail amongst the population in every part of the kingdom, whether dwelling in separate houses, in rural villages, in small towns, or in the large towns, as they have been found to prevail in the lowest district of the metropolis."

3. *It is proved* that disease and mortality fall more heavily upon those who live in large towns and populous places, than in the country districts, and particularly upon those who live in narrow streets, confined courts, damp dwellings, close chambers, cellars, undrained, unventilated, and uncleansed; and affect most severely the infantile portion of the population, and the heads of families between twenty and thirty years of age.

4. *It is proved* that, in such situations, the average duration of life is five to twenty-five years less than it might otherwise be; and that, during this curtailed period of existence, the working power of those who live, and their capacity for enjoyment, are greatly diminished by a constant depression of health and spirits, and by the active attacks of fever, cholera, scrofula, and consumption.

5. *It is proved* "that such diseases, wherever their attacks are frequent, are always found in connection with the physical circumstances above specified; and that where these circumstances are removed by drainage, proper cleansing, better ventilation, and other means of diminishing atmospheric impurity, the frequency and intensity of such diseases are abated; and where the removal of the noxious agencies, and other causes of disease, appears to be complete, such diseases almost entirely disappear."

6. *It is proved* that the annual mortality might be reduced, in the whole kingdom, from 2.27 per cent., or 1 in 44, to less than two per cent., or 1 in 50; and in all large towns, as low as that general average.

7. *It is proved* that this unnecessary excess of mortality above 2 per cent., occasions an annual loss of more than 50,000 lives in the United Kingdom,—"greater than the loss from death or wounds in any wars in which the country has been engaged in modern times;" and that the causes of these unnecessary deaths occasion at least twenty cases of unnecessary sickness, on the average, to each death, or one million cases annually, which might have been prevented.

8. *It is proved* that of the 43,000 cases of widowhood, and 112,000 cases of destitute orphanage, relieved from the poor

rates of England and Wales alone, the greater proportion of deaths of the heads of families occurred from specified removable causes; and that the average of their ages was under forty-five years, or thirteen years below the natural probability of life, as shown by experience.

9. *It is proved* that the preventable causes of disease, and the unnecessary mortality, impose upon the people immense pecuniary burdens which might be avoided.

10. *It is proved* that the younger population, bred up under noxious physical agencies, is inferior in physical organization and general health to a population preserved from such agencies; and that these adverse circumstances tend to produce an adult population, short-lived, improvident, reckless, intemperate, immoral, and with excessive desires for sensual gratifications.

II. THE SANITARY MOVEMENT AT HOME.

Sanitary Police. Some historical notice of the sanitary legislation of Massachusetts, seems proper, preliminary to any statements of its present condition. We have accordingly presented, in the appendix, the titles of all the acts relating to matters connected with the public health, from the commencement of the provincial charter, in the year 1692, to the present time, arranged in chronological order; and referred, in connection, to the printed works where they may be found. The subject seems to have received little attention from the General Court, during the old colonial charter.[1] Two acts, which have some relation to it, we shall presently notice. Laws were passed by

[1] Towns, however, under the general authority which they possessed, sometimes made regulations regarding sickness. The selectmen of Salem, in 1678, "ordered that William Stacy, who is sick of the small-pox, doth not presume to come abroad till three weeks after this date; and that he be very careful that when the time be expired he shift his clothes, and do not frequent company till he be wholly clear of the infection." And again—"The selectmen being informed that William Lord, Jr., is visited with the small-pox, at his father's house, do order that William Lord, sen., his wife and children that live with him, do keep within their house, and that they do not offer to sell any of their wares, viz.: bread, cakes, gingerbread, and the like; and that they suffer none to come to their house, but what necessity requires, upon the penalty of 20*s.* in money for each offence. It is ordered that Thomas Stacey doth forbear grinding at the mill, and that he be careful he doth not infect others, on the penalty of 20*s.* A house is ordered to be impressed for our sick, having the small-pox."—*Felt's Annals of Salem*, Vol. II, p. 423.

The following act was passed by the Massachusetts Colony, in 1660:—

"This court, considering how far Satan doth prevail upon several persons within this jurisdiction to make away themselves, judgeth that God calls them to bear testimony against such wicked and unnatural practices, that others may be deterred therefrom:

"Do therefore order, that from henceforth, if any person, inhabitant or stranger, shall at any time be found by any jury to lay violent hands on themselves, or be wilfully guilty of

the provincial government, relating to nuisances, drainage, small-pox, and some other matters; many of which were special acts, or partial in their operation. But though imperfect, they are honorable to the State, and exhibit the care which the Legislature has ever wished to exercise over the people. To them we have been indebted for many excellent sanitary municipal regulations, which have continued until the present time.

Nuisances. In 1692 and 1708, acts were passed, providing that "in Boston, Salem, Charlestown, respectively, and other market towns in the province," "slaughter-houses for killing of meat, still-houses, and houses for the trying of tallow, currying and dressing of leather, either with lime, alum, or oil, be assigned by the selectmen to places where it may be least offensive," and prohibited elsewhere; and records were to be kept of such assignment. The provisions of these acts were incorporated into that of June 7, 1785, and then extended to Newburyport, and other towns in the State, in which the selectmen and two justices might judge it to be necessary; and included earthen ware in the list of manufactures to be regulated. A fine of £5 was imposed for a breach of the law, which, by the additional act of March 4, 1800, was fixed at $20. The Revised Statutes modified this act, and extended its provisions to any town in the State, at the option of the selectmen, and included "any trade or employment offensive to the inhabitants, or dangerous to the public health."

Drainage and Sewerage. In 1702, an act was passed providing "for appointing commissioners of sewers, for the draining and removing of the banks and obstructions of the passage of waters in rivers, brooks, or ponds that occasion the overflow and drowning of meadows and low lands; and also for the draining and flowing of swamps and other unprofitable grounds, and drying of them." Another act, "for regulating drains and common shores," [sewers,] was passed in 1709, placing them under the direction and control of the selectmen of the town. These provisions were incorporated into the two laws of the

their own death, every such person shall be denied the privilege of being buried in the common burying-place of Christians, but shall be buried in some common highway, where the selectmen of the town where such person did inhabit shall appoint, and a cart-load of stones laid upon the grave as a brand of infamy, and as a warning to others to beware of the like damnable practices." *Ancient Charters and Laws*, p. 187.

State, passed Feb. 26, 1796, and Feb. 20, 1797, and remained in force until their repeal in 1836, when they were reënacted in the modified form of the Revised Statutes.

Sickness. Legislation on this subject, principally with reference to the small-pox, has been frequent in the history of the State. As early as 1701, "an act providing in case of sickness," was passed, "for the better preventing the spreading of infection." By this act, when persons "were visited with the plague, small-pox, pestilential or malignant fever, and other contagious sickness, the infection whereof may be communicated to others," the selectmen were empowered, "for the preservation of the inhabitants," to remove such infected persons to separate houses, and to provide "nurses, tendance, and other assistance and necessaries for them, at the charge of the parties themselves, their parents or masters, (if able,) or otherwise at the charge of the town or place whereto they belong." And the sheriff of the county, his deputy, or the constable of the town, were required, under direction of the selectmen, "to impress and take up convenient housing, lodging, nurses, tendance, and other necessaries for the accommodation and relief of the sick." And if a vessel arriving in the province happened "to be visited with the plague, small-pox, pestilential or malignant fever, during the voyage, or to come from any place where such sickness prevailed," they were authorized to prevent all persons belonging to the ship coming on shore, or those on shore having any intercourse with them. This has been the foundation of all the sanitary laws passed since that time. Its provisions were retained and much extended in the great act of June 22, 1797, which was the most important sanitary act passed in the United States, prior to the passage of the Massachusetts registration laws.

The small-pox has often prevailed in the State as an epidemic, and legislation to guard against its effects has been frequent. In 1730, an act was passed, "empowering courts to adjourn and remove from the towns appointed by law for holding courts, to other towns, in cases of sickness by the small-pox." Another act was passed, in 1751, respecting clothing and other goods supposed to be infected, containing almost the

same provisions as were reënacted in 1797, and incorporated into the Revised Statutes in 1836. Other acts respecting the small-pox were passed in 1742, 1757, 1776, 1777, 1792, and 1793. On the 6th of March, 1809, an act was passed, making it the duty of towns to choose a committee to superintend the vaccination of the inhabitants. This excellent law was so modified, improperly as we think, in the Revised Statutes, as to leave it to the discretion of the selectmen, to act or not to act under its authority, as they might choose.

Insanity. In 1694, towns were required to provide for the "relief, support, and safety" of persons "naturally wanting of understanding, so as to be uncapable to provide for him or herself, or by the providence of God shall fall into distraction, and become non compos mentis." Acts "for suppressing rogues, vagabonds, common beggars, and other idle and disorderly and lewd persons," were passed in 1758 and 1798, by which justices were empowered to commit insane persons to the house of correction. These acts were repealed in 1834, though some of their bad features are still retained. It seems to us that, unless crime has actually been committed, insane persons should not be treated as criminals, but should be restrained and provided for by some other tribunal than a criminal court.

Quarantine. We have already alluded to one law, partially quarantine. In 1700, the masters of ships were required to furnish a list of all passengers to the selectmen of towns, and give security for the support of any "impotent, lame, or infirm person" who might be discharged. At a subsequent period, not exactly known, a hospital was erected on Spectacle Island, by the town of Boston; and, in 1736, an arrangement was made between Boston and the Commonwealth, for a permanent quarantine establishment on Rainsford's Island. No hospital, however, appears to have been erected until some time afterwards. In 1757, "An Act for regulating the Hospital on Rainsford's Island, and further providing in case of sickness," was passed. This act commences, "Whereas a good and convenient house hath been provided at the charge of the province, on the island called Rainsford's Island, for the reception of such persons as shall be visited with any contagious sickness;" and

then follow the general provisions of law on the subject. An additional act was passed in 1758; and in 1799 the whole quarantine regulations were transferred to the Boston Board of Health; and there it rested, as it always should have done, until the Revised Statutes were passed.

Special Legislation. The first Board of Health in the State was established in Boston, by a special act of the Legislature, passed February 13, 1799. This first act was, however, repealed, and another, more comprehensive and extended, was passed in its stead, on the 20th of June in the same year. This act contains twenty-five sections, and has since formed the basis of our special legislation. Besides its own provisions, it imposed upon the board all the powers and duties of the general act of June 22, 1797. Additional acts were passed in 1803, 1804, 1806, 1809, and 1810. In the last-named year, the Board of Health were authorized to make rules and regulations for burial grounds, and for the interment of the dead; and under that act, in that year, was commenced the excellent plan of recording the name, age, and disease of every person buried; which records have been continued until the present time. June 20, 1816, a revised act for establishing the Board of Health, drawn by Benjamin Whitman, Esq., was passed, and repealed so much only of the previous acts, as were inconsistent with its provisions. By the city charter, all the powers of the Board of Health were "transferred to and vested in the city council."

Boards of Health have since been established in other places, according to the following statement:—

Towns.	*When Established.*	*History.*
Boston,	Feb. 13, 1799.	Transferred to City Council, Feb. 23, 1822.
Salem,	June 21, 1799.	" " " March 23, 1836.
Marblehead,	Feb. 22, 1802.	Still existing in the town.
Plymouth,	Feb. 27, 1810.	" " " "
Charlestown,	June 12, 1818.	Transferred to City Council, Feb. 22, 1847.
Lynn,	June 16, 1821.	" " " April 10, 1850.
Cambridge,	March 2, 1828.	" " " March 17, 1846.

The acts of 1799 and 1816, establishing the Board of Health for Boston, provide, "that all the powers and duties which are given to or required of the selectmen of the town of Boston,

by a law of this Commonwealth passed the 22d of June, 1797, entitled 'an act to prevent the spread of contagious sickness,' and by the several acts in addition thereto, shall be and they hereby are transferred to and made the duty of the Board of Health of the town of Boston, any thing to the contrary notwithstanding." These acts have been models, after which the charters of other boards of health, and the municipal ordinances, rules and regulations to carry them into effect, have been formed. The law of 1816 was principally a modification of that of 1799, and repealed only such parts of it as were inconsistent with its provisions. The former acts were occasioned by the then recent outbreak of two great epidemics in Boston,—the small-pox, and yellow fever, which will presently be noticed. The special acts creating boards of health in Salem, Marblehead, Plymouth, and Charlestown, all refer to the act of 1797 as part of their charters. Those of Lynn and Cambridge do not. The law of 1797, here referred to, was repealed by the Revised Statutes; but neither the special acts, nor any part of them, creating the local boards of health, were repealed; hence the general act of 1797 is in force in Boston, Salem, Marblehead, Plymouth, and Charlestown, but nowhere else!

Such was the history and condition of sanitary legislation, prior to the codification of the laws as they appear in the Revised Statutes. The commissioners who performed this work, say, in a note to their report of the twenty-first chapter, relating to public health, that "several provisions of this chapter are adopted with proper modifications from the statute of 1816, relating to the city of Boston; the general laws being deficient in various details, which seem to be requisite in cases where it shall be deemed expedient to appoint such boards. The provisions of that act, being the result of long experience, will probably be found to be adapted to the wants of other populous places, in which such offices are required."[1]

And in looking at the act itself, as thus modified, it appears that two sections, 47 and 48, were taken from the act of 1785; that nine sections, 35 to 43 inclusive, were taken from the act of 1792, relating to the small-pox; that fifteen sections, 5, 6,

[1] Report of Commissioners, p. 124.

9, 10, 11, 16 to 24 inclusive, and 33, were taken from the act of 1797; that one section, 12, was taken from that of 1801; that two sections, 45 and 46, were taken from that of 1810; and that eighteen sections, 1, 2, 3, 4, 7, 8, 14, 15, and 25 to 32 inclusive, and 34, were taken from that of 1816.

And to what trials of legislation have the Revised Statutes been subjected? In 1837, sections 16 and 40 were repealed, and two others substituted in their places. In 1838, sections 16, 17, 38, 40, 41, 42, 43, and 44, were repealed, (being the second repeal of 16 and 40.) In 1840, the 43d and 44th sections, repealed in 1838, were restored and reënacted. In 1848, the two sections substituted in 1837 for 16 and 40 of the Revised Statutes, were repealed, so far as relates to the small-pox. And, in 1849, sections 10, 11, and 46 (among the most important in the whole act) were repealed, and others, *applicable only to cities, and not to towns*, substituted in their places! And many of the provisions thus repealed are in the act of 1797, and are still in force in Boston, Salem, Marblehead, Plymouth, and Charlestown, though not in other places! All this will appear in the acts whose titles we have referred to in the appendix.

The result of this examination has led us to conclude:—

1. That the present health laws of the State are imperfect in their provisions, and are arranged on an imperfect plan; and that the whole have been rendered more defective by the removal of some of the original parts.

2. That it is difficult, if not impossible, even after wading through many works not easily accessible, to know what the laws really are, or what parts are or are not in force.

3. That they are partial in their application and operation; and, if occasion should require, it is extremely doubtful, now, whether *towns*, not cities, have any authority to enforce them.

4. That, if they could be understood and enforced, they are entirely inadequate to the present condition of society, and the present wants of the age.

It is hardly necessary to remark that, under the operation of these laws, but few facts have been preserved which would illustrate the sanitary history of the people. Records of deaths have been made in some of the towns; and the imperfect ab-

stracts of these records which have been published, relating to Boston, since 1810, under the title of "Bills of Mortality," have been noticed.[1]

The most important laws for ascertaining the facts regarding the sanitary condition of the State, in Massachusetts as in England, are those relating to the registration of births, marriages, and deaths. Before these laws were passed, great defects existed. Efforts to remedy these defects had often been made; and an order was introduced into the Boston city council, March 22, 1838, for the appointment of a committee to consider the subject. But circumstances existed, at that time, which prevented any useful action. After frequent communications with the late Hon. John Pickering, then President of the American Academy of Arts and Sciences, and with the late Drs. Hale and Fisher, active members of the Massachusetts Medical Society, the subject was brought before their respective associations; and hence originated the petitions to the Legislature for a modification of the laws, whose subsequent history has already been noticed.[2] Some facts obtained under these laws will presently be given.

A notice of the *Medical Organization*, the professional efforts, and the means for the cure of disease, which have existed in the State, form a part of the history of the sanitary movement. Previous to the formation of the Massachusetts Medical Society, medicine had been recognized rather as an art than as a science. Little or no public instruction on the subject of medicine had been given. The profession was indeed recognized as distinct, and there had been several physicians of eminence.[3] Clergymen, however, at that early period, frequently

[1] See American Journal of Medical Sciences, for April, 1840; Shattuck's Census and Statistics of Boston, pp. 126–177, and Appendix, pp. 71–95; Curtis's Sanitary Report—Transactions of the American Medical Association, Vol. II, p. 487.

[2] See first, second, and fourth Registration Reports; Senate Document No. 24, for 1848, and House Document No. 65, for 1849.

[3] Laws in the Old Colonies. The following acts, relating to the practice of physic, appear among the laws of the old colonies, and are the oldest acts on the subject in the United States. The first was passed in Plymouth, in 1642; and the second in Massachusetts, in 1649:—

1. "If any children or elder persons shall be sent or come from one town to another, to be nursed, schooled, or otherwise educated; or to a physician, or chirurgeon, to be cured of any disease or wound, &c.: if they come to stand in need of relief, they shall be relieved and maintained by the townships whence they came, or were sent from, and not by that township where they are so nursed, educated, or at cure; and in case they come or be sent from any town or place out of this colony, then if the nurse, educator, physician, or chirurgeon, take not sufficient security of the person to be nursed, educated, or cured, to discharge

prescribed for the diseases of their brethren; and although they were not endowed with high attainments in medical science, they were nevertheless qualified for great usefulness in their respective stations. "Altogether unlike the ignorant empirics of the present times, they were actuated by the purest motives, and the highest consideration of benevolence. By their amiable manners, zealous attention, and pious conversation, they endeared themselves to their people; mutual attachments were formed, and the fullest confidence was reposed in their skill." [1]

For the first hundred years in the history of the colonies, midwifery was almost exclusively in the hands of females. The male practitioner was seldom called in, except in difficult cases. Dr. James Lloyd visited London in 1753, and witnessed the practice of some of the eminent physicians there; and, on his return, he commenced the practice himself, and has the credit of being the first male practitioner in this branch of the profession in Massachusetts.[2]

During the revolutionary war, the deficiency in medical knowledge became apparent, and "philanthropic men, in and out of the profession, were desirous that the standard of medical education should be raised, medical information diffused, and means devised to secure to the community a succession of well educated physicians, competent to its wants;" and these deliberations resulted in the formation of the Massachusetts Medical

the township of and from all cost and charge which shall or may come and befall the said township in which he or they is so to be nursed, educated, or cured: then they the said nurse, educator, physician, or chirurgeon, as neglects the same, shall discharge the said township of them themselves." *Plymouth Colony Laws*, p. 72.

2. "Forasmuch as the law of God allows no man to impair the life or limbs of any person, but in a judicial way:

"It is therefore ordered, that no person or persons whatsoever, employed at any time about the bodies of men, women, or children, for preservation of life or health, as chirurgeons, midwives, physicians, or others, presume to exercise or put forth any act contrary to the known approved rules of art, in each mystery and occupation, nor exercise any force, violence or cruelty upon or towards the body of any, whether young or old, (no, not in the most difficult and desperate cases,) without the advice and consent of such as are skilful in the same art, (if such may be had,) or at least of some of the wisest and gravest then present, and consent of the patient or patients, if they be mentis compotes, much less contrary to such advice and consent, upon such severe punishment as the nature of the fact may deserve; which law, nevertheless, is not intended to discourage any from all lawful use of their skill, but rather to encourage and direct them in the right use thereof, and inhibit and restrain the presumptuous arrogancy of such as, through confidence of their own skill, or any other sinister respects, dare boldly attempt to exercise any violence upon or towards the bodies of young or old, one or other, to the prejudice or hazard of the life or limb of man, woman, or child."—*Ancient Charters and Laws*, p. 76.

[1] Thatcher's Medical Biography, Vol. I, p. 14. In these volumes, the lives of many physicians are noticed.

[2] Communications, Massachusetts Medical Society, Vol. II, p. 243.

Society, which was incorporated Nov. 1, 1781. Their act of incorporation contains this passage:—

"As health is essentially necessary to the happiness of society; and as its preservation or recovery is closely connected with the knowledge of the animal economy, and of the properties and effects of medicines; and as the benefit of medical institutions, formed on liberal principles, and encouraged by the patronage of the law, is universally acknowledged."—"And whereas it is clearly of importance that a just discrimination should be made between such as are duly educated, and properly qualified for the duties of their profession, and those who may ignorantly and wickedly administer medicine, whereby the health and lives of many valuable individuals may be endangered, or perhaps lost to the community: be it enacted," &c.

Additional acts were passed in 1789, 1803, 1818, 1819, 1830, 1834, 1836, (Rev. Stat., p. 214,) and 1850.

By-laws for the regulation of the society have been adopted at various periods, but they have never been enforced very stringently. Cases of expulsion for violations have sometimes, though very rarely, occurred. The influence of the society has, however, been most salutary, in raising the standard of medical education, and in producing a more respectable, more highly educated, and better qualified class of physicians.[1]

The acts of 1818 and 1819 provided as follows:—"No person, entering the practice of physic, or surgery, shall be entitled to the benefit of law for the recovery of any debt or fee accruing for professional services, unless he shall, previously to rendering those services, have been licensed by the officers of the

[1] The following extracts are from the by-laws of the society:—

"XII. Any person engaged in the practice of medicine or surgery in this Commonwealth, who has not received such a medical education as is required; and any one who shall be guilty of practices forbidden to fellows, shall be deemed an irregular practitioner; and it shall be unlawful for any fellow to advise or consult with any such irregular practitioner, or in any way to abet or assist him as a practitioner of medicine or surgery. For any breach of this law, a fellow of this society shall be disqualified for one year from giving his vote at any meeting of the society, or of the district society of which he may be a member. He shall also be liable to the censure and reprimand of the counsellors, and, in aggravated cases, to expulsion.

"XIII. Any person who shall publicly advertise for sale, or otherwise offer, any medicine, the composition of which he keeps a secret, or offers to cure any disease by any such secret medicine, shall be considered an irregular practitioner; and, if a fellow of this society, shall be liable to expulsion, or to such other penalty as the society, at their annual meeting, may think proper to inflict."

Massachusetts Medical Society, or have been graduated a doctor of medicine in Harvard University." The legal advantages of these acts were, however, seldom or never improved; and they were repealed in 1836, at the suggestion of the society. *There is no such thing as a legal* MEDICAL POLICE *existing in the State.* No restriction is laid upon any one in the practice of physic, or in dealing in drugs and medicines. Any one, male or female, learned or ignorant, an honest man or a knave, can assume the name of a physician, and "practice" upon any one, to cure or to kill, as either may happen, without accountability. "It's a free country!" [1]

That the influence of the Massachusetts Medical Society upon the health of the people may be more clearly seen, we have compiled the following account of the *movement of the medical profession in the State*, since its formation:—

COUNTIES.	FELLOWS OF THE SOCIETY.				Z. B. Adams, 1847.	Physicians in 1850.	Dead in 1840.	Ages known.	Average age.
	1789.	1808.	1826.	1840.					
Barnstable, - -	1	1	2	16	31	34	5	4	78.25
Berkshire, - -	3	8	27	36	70	69	20	10	53.60
Bristol, - -	2	4	13	35	72	78	7	4	66.25
Dukes, - -	0	0	0	2	3	5	1	0	-
Essex, - -	9	30	44	86	124	130	42	35	62.03
Franklin, - -	1	4	10	19	54	48	9	4	60.25
Hampden, - -	3	4	19	17	58	54	13	9	60.77
Hampshire, - -	1	7	12	25	57	59	14	10	66.50
Middlesex, - -	7	15	60	127	184	183	43	30	57.73
Nantucket, - -	0	1	1	3	11	3	1	1	68
Norfolk, - -	4	11	31	50	82	77	13	12	63.92
Plymouth, - -	3	10	22	34	56	52	19	15	61.66
Suffolk, - -	13	25	60	136	280	261	53	42	53.59
Worcester, - -	5	23	55	78	155	163	36	18	61.39
Total, - -	52	143	356	664	1237	1216	276	194	60.23

The number of Fellows belonging to the society in 1789, 1808, 1826, and 1840, has been ascertained from its publications; in 1847, from a communication from Dr. Z. B. Adams,

[1] The following are the legal requirements of the medical profession in other states:—

"*Maine.* Formerly, none but regularly licensed physicians could collect their dues; several years since, however, the law was repealed, and the field is now open to all.

"*New Hampshire.* The state laws of New Hampshire do not require any license. There are no laws on the subject of medicine.

"*Vermont.* The state laws require no license. A law was passed in 1821, requiring the M. D. or A. B. degree; but it was repealed in 1838.

"*Rhode Island.* 'The legislature has done nothing for the suppression of quackery.' There are no laws on the subject.

in the Transactions of the American Medical Association, (Vol. I, p. 366); the physicians in 1850, from Capen's State Record; and the deaths and ages, previous to 1840, from Dr. Ebenezer Alden, of Randolph.[1]

From the history of the society, it appears that 1139 Fellows, (including 94 honorary members,) joined the society prior to 1840, exclusive of those belonging to Maine before its separation; of whom 664 were then living in the State, 65 had resigned, 105 had removed, and 276 had died.

Since 1840, as far as can be ascertained from the records, 439 Fellows have been admitted, of whom 165 were in Suffolk county. About 65 have resigned or removed, and 125 have died, leaving still connected with the society, 254; which, added to those belonging to it in 1840, make 918, as the present number of Fellows. Capen's State Record gives 1216, which probably includes physicians from other states, who are not connected with the society, and some who are not considered "regular" physicians. The number of regular physicians in the State is estimated at 1100, and the others at 400; besides dentists, and those who devote themselves exclusively to one particular branch, and are called "doctors."

The average annual charges of physicians in the State have been estimated, by intelligent members of the profession, at $800 each, and the actual receipts at $600 each. If this estimate be correct, about $900,000 is paid for medical advice. The amount paid for medicine, including the patent nostrums, is much more. *Two millions of dollars*, at least, are expended annually in the State, for the cure of disease.

The *Medical School* connected with Harvard University was founded in 1783, though the first degree was not conferred until 1788. Degrees were conferred upon 25 persons, prior to

"*Connecticut.* The legislature, several years since, repealed the law requiring a license for the legal collection of fees,—thus virtually licensing all practitioners. The State Medical Society admits to membership only such as have the diploma of M. D., or the legal license.

"*New York.* No restrictions since 1844, when the law was repealed. All persons now have the right to practice, and recover compensation for services."

See Transactions of the American Medical Association, Vol. II, p. 326, where a full account for all the states may be seen. Also, Transactions of the New York State Medical Society, App. to Vol. VI, p. 37. See note, p. 16 of this report.

[1] For a more particular history of the society, and medicine generally, see American Quarterly Register, Vol. XII, p. 358, and Vol. XIII, p. 75. Also, Thatcher's History of Medicine, prefixed to his American Medical Biography.

1800; upon 124, from 1800 to 1820; upon 393, from 1820 to 1840; and upon 259, from 1840 to 1850.

The *Berkshire Medical School*, at Pittsfield, was incorporated in 1823, and probably more than 700 have since graduated.

The *Boylston Medical School*, incorporated in 1847, and the *Tremont Medical School*, formed in 1838, and incorporated in 1850, are located in Boston. These schools are entirely independent of that connected with Harvard University, and they receive students at any time.

It is said, by those who are familiar with the medical schools in Europe and this country, that few places can be found where greater facilities exist for obtaining a thorough education than in Boston; whether we consider the high character of the scientific instruction given, the opportunities of witnessing the practical application of those principles, the ease with which subjects are obtained, or the expenses incurred.

Schools for instruction in other modes of practice have also been formed in the State.

Various medical associations for improvement in medical science and medical practice; and public hospitals, and other public institutions for the cure of disease, are to be found in the State, in as good condition as in any other part of the world.

The *Medical Literature* of the State has had considerable influence upon the health of the inhabitants. It was stated in 1810, as a remarkable fact, that "*twenty-seven* foreign medical books had been republished in Massachusetts!"[1]

The *Medical Repository*, the first periodical work devoted to medicine in the United States, was commenced in New York in 1797. The *New England Journal of Medicine and Surgery* was commenced in Boston, in 1812, and continued until 1827. The *Boston Medical Intelligencer*, edited by Dr. J. V. C. Smith, was commenced in 1822, and was published weekly until 1828. The two latter works were united; and, on the 19th of February, 1828, the first number of the *Boston Medical and Surgical Journal* was issued in their stead, which has since been continued, under the editorial charge of Dr. Smith. The

[1] Communications, Massachusetts Medical Society, Vol. II, p. 265. See New York Journal of Medicine, for March, 1850.

Boston Medical Magazine, commenced in 1831, and the *New England Quarterly Journal of Medicine and Surgery*, commenced in 1842, were each discontinued after the first volume was published.

These periodical publications, and several separate works and essays, contain some facts concerning the prevalence of epidemic and other diseases in Massachusetts, though they are very imperfect and disconnected. They, however, show the great value of more complete and thorough investigation and knowledge. The sanitary history and condition of the State should be known; for this knowledge might suggest the remedial measures proper to be adopted; and we deem it proper, in this connection, to refer briefly to some of the facts which we have gleaned on the subject.

In 1618, two years before our forefathers arrived at Plymouth, there appeared, among the Indians of the country, one of the most remarkable epidemics of which we have an account. So fatal was the pestilence, that the warriors "were reduced from nine thousand to a few hundreds." The Massachusetts tribe alone was supposed to have lost 2,700 out of 3,000 persons. In 1621, many places which had been populous Indian villages were found "all deserted—all dead." The bones of those who perished were lying unburied. Hutchinson says some have supposed the disease to have been the small-pox; but from the Indian account we might infer otherwise. Gookin says, "What the disease was which so generally and mortally swept them away, I cannot learn. I have discoursed with some old Indians that were then youths, who say that the bodies all over were exceeding yellow, (describing it by a yellow garment they showed me,) both before they died, and afterwards." It has been inferred from this that it was the yellow fever; but whether correctly or not seems undetermined.[1]

1621. At the commencement of the settlement of Plymouth, our venerable ancestors suffered severely from sickness. At the end of three months after their arrival, fifty-five only survived of the one hundred and one who came in the Mayflower. "The sick were destitute of almost all the comforts which

[1] Mass. Historical Collection, Vol. I, p. 143; Hutchinson's Hist. Mass., Vol. I, p. 34.

their miserable condition rendered indispensable. Their sufferings were increased by the want of well persons to perform the duties among the sick; there being, at one time, not more than six or seven persons in tolerable health."[1]

1631. The small-pox, first breaking out at Saugus, spread from Narraganset to Piscataqua, and westward to Connecticut River, and swept off entire villages of the Indians. When Increase Mather wrote, there were living some old residents, who on that occasion helped to bury whole families of the natives at the same time.

1633. At the close of this year the small-pox again broke out, and made great devastations among the unfortunate native races of Massachusetts. Chickatabut, the great sachem of the tribe, was among the victims.

1634. Plymouth was again visited with a mortal sickness, of which twenty men, women and children died; among whom was that most excellent and pious man, Dr. Samuel Fuller, the first physician of New England. "It must have been occasioned by a fever of domestic origin, as the colony had at that time no intercourse with foreign countries, except England."

1639 was sickly in the colonies, and a general fast was observed on account of the small-pox and fevers.[2]

1645. Great sickness prevailed among the Indians at Martha's Vineyard. Few escaped.

1647. A malignant fever prevailed, "occasioned by the excessive heat of summer;" and an epidemic influenza passed through the whole country, and universally affected the colonists and natives; but it was not very mortal: "wherein a special providence of God appeared, for not a family nor but a few persons escaping it; our hay and corn had to be lost for want of help; but such was the mercy of God to his people, as few died—not above forty or fifty in the Massachusetts, and near as many at Connecticut."[3]

1654. A general fast was appointed, on account of "the mortality which had been among the people of Massachusetts:" what the disease was does not appear.

[1] Thatcher's Hist. Plymouth, p. 32. [2] Webster, Vol. 1, p. 137.
[3] Winthrop's Journal, II, p. 310.

1655. Another epidemic distemper, similar to that of 1647, passed through New England. It began in June, and few persons escaped. Among those who died was Rev. Nathaniel Rogers, of Ipswich.

1658. Sickness and mortality throughout New England.

1659. Croup is first mentioned in the annals of the country. Other malignant diseases also prevailed about this time. Thirty children died in Rowley. A day of thanksgiving was appointed in Connecticut, for the "abatement of the sickness in the country, and a supply of rain in time of drought."

1668 was a year of great sickness, though few facts are preserved concerning its extent. In New York a public fast was held on account of it.

1677. Small-pox was very fatal in Charlestown. The records state that thirty-one died of the disease, one of whom was the Rev. Thomas Shepard.

1678. Small-pox in Boston; but we have seen no account of its victims.[1] Seven or eight hundred are said to have died of it in the State. About this time "the seasons were unfavorable, and the fruits blasted, while malignant diseases prevailed among the people. The sickness and bad seasons were attributed by our pious ancestors to the irreligion of the times, and to their disuse of fasting; and a meeting was held to investigate the causes of God's judgments, and to propose a plan of reformation."[2]

1697–8. The influenza began in November, and prevailed until February, in Massachusetts. Whole families and whole towns were seized nearly at the same time. In the same year, a "mortal disease prevailed so much, in Fairfield, Connecticut, that well persons were not found to take care of the sick and bury the dead. Seventy died in three months, out of a population of less than one thousand. At the same time, a dreadful mortality occurred in Dover, New Hampshire. Rev. Dr. Mather said, in a sermon preached in Boston, in 1698: "The small-pox has four times been a great plague among us. Often had one hundred bills, desiring prayers for the sick, been read in one day, in one of our assemblies. In one twelvemonth about

[1] Felt: Annals of Salem, Vol. II, p. 423. [2] Webster, Vol. I, p. 203.

one thousand of our neighbors have been carried to their long home."

1702. Small-pox in Boston: two hundred and thirteen, exclusive of blacks, died; about 4.4 per cent. of the inhabitants. It began in June, 1702, but the first death was in August of that year. In September, it became very mortal, and was attended with a fever resembling the scarlet fever. In October many died. The General Court sat at Cambridge, and they passed the first law for protection against the small-pox already noticed. It began to subside in February, 1703.[1]

1715. Plymouth lost forty of its inhabitants by a malignant disease, but no particulars are known.[2]

1717–1718. From November to February, "a very malignant and mortal distemper" prevailed in Concord. Twenty-seven persons, chiefly heads of families, died; many very suddenly. The disease is not named in the record.[3] A fast was held in Danvers, February 13, on account of a fatal disease that prevailed at the village, which threatened at one time to sweep away the entire population.[4]

1721. The small-pox again made its appearance in Boston, with more than its usual ravages and horrors, and was the occasion of one of the most remarkable and important events in the sanitary history of the State. *Inoculation with the virus of small-pox*, as a substitute for the disease taken in the natural way,—to disarm it of its malignity, and to reduce it to comparative mildness and safety,—was first introduced this year. Rev. Dr. Cotton Mather, having read, in the Transactions of the Royal Society of London, favorable accounts of the operation, recommended a trial of it to the physicians of Boston; but all of them unanimously and decidedly opposed it, excepting Dr. Zabdiel Boylston. That enlightened and upright man became forcibly impressed with the importance of the discovery; and, to show his confidence in it, made the first experiment on his own son, thirteen years of age, and two colored persons in his family, one two, and the other thirty-six years old; and all with complete success. Subsequently, others were inoculated.

[1] Webster, I, p. 216.
[2] Ibid, I, p. 224.
[3] Shattuck's History of Concord, p. 223.
[4] History of Danvers, p. 42.

The controversies which accompanied the introduction of this useful measure, were most disreputable. Many persons were struck with horror; some thought it was sinning against God, thus to interfere with the disease; and others that, if any patients died, Dr. Boylston ought to be treated as a murderer. Pamphlets and newspaper articles frequently appeared; and the populace, chiefly led on by the inflammatory conduct of the physicians, at the head of whom was Dr. Douglass, became so exceedingly enraged, that Dr. Boylston was frequently insulted in the streets, and forced to secrete himself for more than fourteen days, and afterwards to visit his patients only at midnight. His family were hardly safe in his own house. Passion and prejudice on the one side, however, were met with decision and success on the other; and inoculation soon triumphed over opposition, and became general.[1]

During this epidemic, 5,759 persons,—more than half the inhabitants,—had the disease in the natural way, of whom 844 died. Two hundred and forty-seven were inoculated by Dr. Boylston, and thirty-nine by other physicians, of whom six only died. This was one death in seven of those not inoculated, and one in forty-seven of those inoculated, showing decidedly the advantages of inoculation.

1735. On the 20th of May, in this year, scarlatina, or putrid sore throat, appeared in Kingston, New Hampshire, and became one of the most dreadful epidemics which have ever desolated

[1] Those who may wish to investigate this curious subject are referred to a volume of these pamphlets, preserved in the library of the Massachusetts Historical Society; and to Thatcher's American Medical Biography, Vol. I, pp. 20, 135, 255, where will be found notices of Drs. Boylston and Douglass.

Douglass had his prejudices and eccentricities. In his "Summary," published in 1753, (II, p. 351,) he wrote as follows, of the medical profession:—"In general, the physical practice in our colonies is so perniciously bad, that excepting in surgery, and some very acute cases, it is better to let nature, under a proper regimen, take her course, than to trust to the honesty and sagacity of the practitioner: our American practitioners are so rash and officious, the saying in the Apocrypha (38 and 15) may with much propriety be applied to them—*'He that sinneth before his Maker, let him fall into the hands of the physician!'* Frequently, there is more danger from the physician than from the distemper. Our practitioners deal much in quackery and quackish medicines, as requiring no labor of thought or composition, and highly recommended in London quack bills, (in which all the reading of many of our practitioners consists,) inadvertently encouraged by patents for the benefit of certain fees to some offices, but to the very great damage of the subject." "In the most trifling cases they use a routine of practice. When I first arrived in New England, I asked a most noted facetious practitioner what was their general method of practice; he told me their practice was very uniform: bleeding, vomiting, blistering, purging, anodynes, &c.; if the illness continued, there was *repetendi*, and finally *murderandi;* nature was never to be consulted, or allowed to have any concern in the affair. What Sydenham well observes, is the case with our practitioners: Æger nimia medici diligentia ad plures migrat."

New England. The first person seized was a child, which died in three days. In a week, three other children, in a family four miles distant, were taken, and died on the third day afterwards. Of the first forty, none recovered. In August, it appeared in Exeter, and soon after spread into other places. In fourteen towns in New Hampshire, 984,—chiefly persons under twenty years of age,—died, between June, 1735, and July, 1736. Of those taken sick, in some places one in three, in others one in four, and in scarcely any less than one in six, died.

In Boston, the first case occurred on the 20th of August. Subsequently the disease spread through the town. Dr. Douglass says, in the eight previous years of medium health, about 263 persons in Boston, on the average, died in seven and a half months,—October to May 18; but in this year, 382, or 114 above the usual number, died. About 4,000, or one-quarter of the inhabitants, had the disease, of whom one in thirty-five died.

In Newbury, it began in September, and, before February, 81 persons died. Thomas Smith lost two children; John Boynton four,—all buried in one grave,—two on Saturday, and two on Sunday. Benjamin Knight had three buried in one grave. In Byfield, between October, 1735, and October, 1736, 104 died; supposed to have been about one-seventh of the population. Thirteen families buried all their children. In one family eight died; four of them were buried at one time, in the same grave. In Rowley, 190 died; "probably about one-eighth of the whole town." In 1736, in Andover, 35 died; 31 in 1737, and 123 in 1738; mostly children and young people. "Capt. James Stevens, his wife, and three children, died within a month. Nine families lost three children from each in a few days. Four families lost four children from each in less than fourteen days. John Wilson lost eight children in seven days. In 1739, fourteen children died in four families in a few days. Ebenezer Lovejoy lost three children in one day, and another in five days after. Joshua Stevens lost three children in four days. The disease raged most from August to December." In Haverhill, 199 died, from November, 1735, to October, 1737. What is here exhibited was to be seen in very many other

towns in the State. It was indeed the "*plague* among children."[1]

1740–1744 was a sickly period. Scarlatina prevailed in Massachusetts. In 1742 a destructive fever prevailed in Holliston. Rev. Mr. Stone, the minister, and fourteen of his congregation, died. In 1753, fourteen perished also, by a fever, in that town.

From 1745 to 1749, several sickly seasons occurred; but we have seen no definite account of them, which would exhibit their extent.

1752. Small-pox in Boston: 7,669 cases occurred,—5,545 in the natural way, and 2,124 by inoculation,—in a population of 15,684, of whom 569 died.

1755. An alarming fever appeared in Pepperell, and spread to some of the neighboring towns, during this and the three subsequent years. From its origin and great mortality, it acquired the popular name of the *Pepperell Fever*. Physicians called it a "*putrid malignant nervous fever;*" probably the same as a severe form of the typhus. One hundred and eighty persons were sick, from August 5 to the last of October, 1756, of whom eighteen died. September 16 was kept as a day of fasting and prayer; and December 13 as a day of thanksgiving, when the sickness seemed entirely removed. Two hundred and nineteen persons were sick, from July 1 to October 15, 1757, of whom twenty-five died,—seventeen heads of families. Ninety-six persons were sick, from August 1 to October 15, 1758, of whom eleven died,—of which number seven were heads of families. The population of the town was then about seven hundred. January 3, 1760, was set apart, by Rev. Mr. Emerson and his people, as a day of thanksgiving, "to commemorate the goodness of God to them the past year, especially in the removal of sickness, and the return of so many soldiers from the army." The sermon preached on the occasion was printed. "In the four years," says Mr. Emerson, "there were above 540 persons sick; 103 died, of whom 16 were soldiers

[1] See Douglass' History of the Epidemic. This tract was republished in the New England Journal of Medicine, Vol. XIV, for 1825, pp. 1–13. See also Coffin's History of Newbury, pp. 204, 205; Gage's History of Rowley, p. 432; Abbot's History of Andover, p. 182; New Hampshire Historical Collection, Vol. V, p. 20; Webster's History of Epidemics, Vol. I, p. 233; Rev. Messrs. Fitch and Brown's account.

from home, or just after their return ; no less than 48 heads of families ; 64 grown persons. How great was our distress for two years, especially in the height of the sickness, and we, notwithstanding, obliged to find our quota for the war! I know not that we were eased more than a single man, excepting the time of the general alarm, when Fort William Henry was besieged, in 1757, when our proportion was above twenty men, at which time there were not so many able to bear arms in the place, besides those who were necessarily taken up in attending on the sick in their own families, the field officers were so good as not to call for any. One of the years, there were near two hundred confined at the same time. Your pastor at the point of death, and then confined from the house of God for four months. And of this large number who have been sick, I know not of ten persons who have been visited by the same distemper twice. Nor should we forget the bounty we received by order of authority, namely, fifty pounds, to be distributed amongst the greatest sufferers." The cause of this Pepperell fever was thought to be the miasma arising from decayed vegetable matter. The swamp or meadow of John Shattuck, near Henry Jewett's, had been overgrown with bushes and various vegetables ; and, in order to kill them, and bring the land into a state of cultivation, a dam was built, and the swamp overflowed with water. When the water had been drawn off, and the vegetable matter exposed to a summer's sun, the stench was very offensive, and extended perceptibly for several miles around." [1]

1763. "In August, the Indians on Nantucket were attacked by a bilious plague ; and, between that time and the February following, their number was reduced from 358 to 136. Of 258 who were affected, 36 only recovered." The Indians on Martha's Vineyard suffered from the same fever. Not a family escaped. Of 52 attacked, 39 died. It was confined in both places to the Indians, and none but those of full-blood died! [2]

1764 to 1780. During this period there were many years of sickness, but we have few facts preserved to show its extent.

[1] Butler's History of Groton, p. 350. See also Holmes's Prize Dissertation, p. 113.
[2] Webster, Vol. I, p. 252.

Throat distemper and small-pox prevailed in 1764. In Salem, 44 died of the dysentery, in 1769; 56 of fever, in 1771; 51 of dysentery, 29 of fever, and 17 of small-pox, in 1773. Dysentery was very prevalent in 1775, in various places. In Concord about forty died. In the Andover South Parish about 200 were sick, and 56 died. Small-pox occurred in 1777–8, in Boston, and many of the country towns. Rowley "established a smoke house, in which they required all persons and baggage from Boston to take a smoking."

In 1780 a malignant typhus appeared in Boston, having been introduced by the Alliance frigate. Many were sick, and several died.

1792. This was the memorable small-pox year in Massachusetts. On its appearance in Boston, the inhabitants were greatly alarmed. "The whole town was inoculated in the course of three days, owing to the infatuation of the inhabitants with respect to the danger of infection, founded on a preposterous notion that so soon as any person had been inoculated the whole neighborhood was endangered. Those whose circumstances admitted had generally sent their children to the neighboring hospitals for inoculation. Those which remained were, therefore, generally in low circumstances. Whole families were often crowded together in single rooms, where fires were constantly kept up for the purposes of cooking, and the patients were destitute of most of the comforts of life, with very little personal attendance, from the disproportion of nurses to the numbers of the sick.

"The consequences which ensued constituted a scene of confusion and wretchedness which no one, who was a witness of it, could have viewed without horror and commiseration. It is to be hoped, for the cause of humanity, that the inhabitants of Boston will never again experience this calamity; as they have it now in their power, by embracing the means which heaven has put into their hands in the vaccine inoculation, to secure themselves forever from its desolating ravages." [1]

Two hundred and thirty-two took the disease in the natural way, of whom 33 died; and 8,114 by inoculation, of whom

[1] Communications, Massachusetts Medical Society, Vol. II, p. 482.

165 died. The population of the town was then 19,484. Of these, 10,655 had previously had the disease, 262 removed out of town, and 221 only, who remained, liable to the disease, escaped. The following table exhibits the cases by small-pox at the different times of its appearance in Boston :—

Year.	Cases.	Dths.	Ratio per 100 of the population.		Natural.			Inoculated.		
			Sick.	Died.	Cases.	Deaths.	Ratio per cent.	Cases.	Dths.	Ratio per cent.
1721	6006	850	54.6	7.7	5759	844	14.8	247	6	2.4
1730	4000	500	26.6	3.3	3600	488	13.5	400	12	3.0
1752	7669	569	48.9	3.6	5545	539	9.7	2124	30	1.7
1764	5646	170	36.4	1.1	669	124	18.5	4977	46	.9
1776	5292	57	44.1	1.0	304	29	9.5	4988	18	.5
1778	2243	61	16.6	.4	122	42	34.4	2121	29	.9
1792	8346	198	46.0	1.0	232	33	14.2	8114	165	1.8

In Charlestown, in September and October, 1,352 were inoculated, of whom nine died. Twelve took the disease the natural way, of whom three died. Eight hundred and seventy-nine were inhabitants ; the others belonged to the neighboring towns, and came in to be inoculated.[1]

In Concord, a hospital was fitted up, where 130 persons were inoculated. Some took the disease in the natural way. Ten died,—two had the disease by inoculation, and eight by contagion,—and they were all buried in a separate burial ground.[2]

In Framingham, it appeared in this and the next year. Mr. Barry, in his valuable history of that town, says : " In September, 1792, according to the records, ' it having been proposed by the physicians of the town to receive permission to *inoculate with the small-pox*,' the town voted ' not to have the small-pox in town, by inoculation, nor any other way, if it can be prevented.' May, 1793 : ' Voted, that the selectmen be a committee to prosecute any person that shall spread the small-pox, by inoculation, or any other way.' At the same time, the town granted £30 to assist the sick, and appointed a committee of distribution. A hospital was provided at the house of Mr. George Pratt. The disease was introduced into the town by

[1] Medical Repository, Vol. II, p. 10. [2] Shattuck's History of Concord, p. 224.

one David Butler, who came to Framingham from Peterborough, and falling sick with the disease, his nurses, to the number of seventeen, took the infection, and five persons besides Butler died."

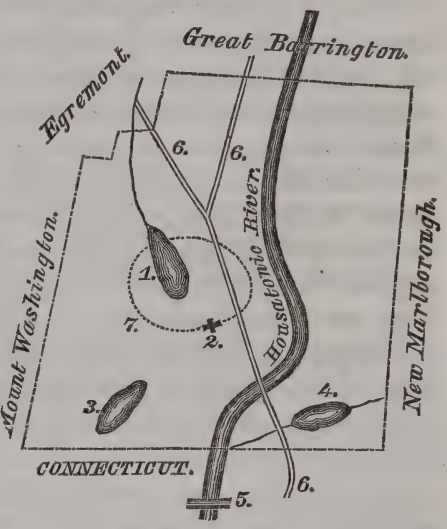
In Scituate, a small-pox hospital was opened, but it did not restrain the disease. Twelve died, in different parts of the town. "An action was commenced against the physicians, for a breach of bond for faithful discharge of duty, &c.; but after the panic which had seized the people was a little calmed, the action was withdrawn." [1]

1796. This was a very sickly year. In Boston, a very malignant typhus appeared on the 25th of August; and between that time and December many were sick, and thirty died. It created great alarm; some were buried in the night. Dr. John Warren, who wrote an account of it, says that the physicians were unanimous in the opinion that it originated from local causes.[2] "A very great portion of those taken sick were situated near extensive flats, particularly about the easterly, southeasterly, and westerly skirts of the town. The place called Oliver's Dock, where the disease was most prevalent, was exposed to exhalations from foul substances lodged about the wharves and docks of that quarter, with buildings so constructed as to admit of but very imperfect ventilation, and with large numbers of inhabitants crowded together in a small space." The following prophetic language proves that the writer then well understood the causes of disease, which have been, in recent years, brought so fully before the public: "That it originated from noxious substances, exhaled into the atmosphere from putrifying animal or vegetable matter, or both, is extremely probable, from the places in which it was most prevalent; and that a confined situation, or filthy state of the streets, alleys, and by-places of the town, will, as it becomes more populous, rents higher, and consequently the poor more closely crowded together, further expose us to the danger of such diseases, is a serious truth, which may, perhaps, in some future day, be too fatally evinced." [3]

[1] Deane's History of Scituate, p. 113.
[2] Communications, Massachusetts Medical Society, Vol II, p. 445.
[3] New York Medical Repository, Vol. I, p. 139, 140.

In this year, also, a very malignant dysentery and bilious fever appeared in Sheffield. It was confined principally to a section of the town not over one and a half miles in diameter,—in the vicinity of a pond known as Hubbard's Pond,—containing about 100 families, or 600 inhabitants. Of these, over 300 were sick, and 44 died; 12 adults, and 32 children. Among 150 who lived near the pond, on the southeasterly side, less than 10 escaped. Of those on the westerly side, about 50 were affected.

The cause of this remarkable sickness, and others of similar character, which that town suffered in other years, was attributed to this pond. A dam was built at the outlet, and, at times of high water, a large tract of land was overflowed. In dry seasons the water was drawn off, and large quantities of decomposing vegetable matter were exposed to the action of the sun, which produced a poisonous exhalation, or *malaria*, which affected nearly all who inhaled it. The accompanying cut will show the situation of this pond.[1]



1. Hubbard's Pond, the principal source of malaria. 2. Meetinghouse. 3. Bush's Pond. 4. Ashley's. 5. Dam across the river in Connecticut. 6. Roads. 7. Dotted line showing the space occupied by the endemic of 1796, and within which space it has occurred sporadically since.

1798. The yellow fever appeared in Boston, June 17, in a family living on Stoddard's wharf. Of eight persons in the family, five had the disease, of whom two died. It spread to Long Wharf, and in July to Fort Hill. On the southeast and

[1] Dr. William Buel, of Litchfield, Conn., communicated to the New York Medical Repository (Vol. I, p. 453,) an account of the sickness in 1796; and to the Massachusetts Medical Society, in 1835, a more general description of the sanitary condition of the Housatonic Valley. Large parts of these papers were published by Dr. O. W. Holmes, present Dean of the Medical Faculty of Harvard University, in his valuable Prize Dissertation on Intermittent Fever, pp. 60–81. We are indebted to this work for several valuable facts, and also for the above illustration.

south side of the hill, scarcely a family who resided below the summit escaped; one family lost five out of six. And probably the greatest part of the inhabitants in that part of the town would have fallen victims to the disease, if they had not removed into the country. In August, September, and October, it spread to the northern and western parts of the town. The number sick was not ascertained. Dr. Rand, who wrote a particular account of the epidemic, says, of 103 patients he lost 11. Whether the general proportion was the same, does not appear. He conjectured that 8,000 inhabitants removed into the country. The number who died, between June 23 and October 22, was stated by Dr. Rand at 145; by Dr. Brown at 250, and he said, "I believe that 300 is not above the real amount." The disease was supposed to have been of domestic origin, and was attributed to the filthy condition of the streets and docks, and to decayed animal and vegetable matter. The N. Y. Med. Repository contains several articles on the subject.[1]

In Newburyport, the yellow fever appeared in June, and between that time and the 16th of October, about forty persons died, principally on the fourth, fifth, sixth, or seventh day of the attack. It excited great alarm.[2]

1800. The question whether overflowing lands for mill-ponds or other purposes, generated a malaria which was unfavorable to health, was much discussed about this time, especially by the people in the westerly part of Massachusetts, and in Connecticut. As it is a question at all times of great importance, it has seemed proper to gather up some of the facts which were elicited at that time.[3] We have already described its effect in Sheffield.

[1] See Vol. II, pp. 212, 333, 390, 466.

[2] Medical Repository, Vol. I, p. 504; Coffin's History of Newbury, p. 270.

[3] We insert the following "Brief Account of a Trial at Law, in which the influence of Water, raised by a Mill-Dam, on the health of the inhabitants in the neighborhood, was considered. By Hon. David Daggett":—

"Before the Superior Court, held at Litchfield, on the fourth Tuesday of January, 1800, was tried an action of trespass, instituted by Joseph Ruggles, of New Milford, against Elijah Boardman, and others, inhabitants of New Milford.

"The claim on the part of the plaintiff was, that the defendants, in January, 1799, destroyed a part of his mill-dam, erected across the Housatonic River, and nearly opposite the most compact part of the town. The defendants acknowledged that they had injured the dam in manner as alleged, and justified on the ground that the dam was a public nuisance, in that it was the cause of a distressing sickness which had for several years visited New Milford. It was agreed that a dam had stood at or near the place of the present dam for about sixty years past; and that the dam complained of had been, by the plaintiff, in July and August, 1796, raised about ten inches. It was also agreed that a bilious remitting fever, and the fever and ague, had raged with great virulence in the vicinity of this dam, in the years 1796–7–8 and 9. The great question, therefore, in the case was, whether the raising of the

"The Housatonic is a stream of two or three hundred yards in width, running near the western border of the States of Massachusetts and Connecticut, and emptying into Long Island Sound. This stream, for thirty or forty miles above Canaan Falls, meanders through a valley of from one to five or six miles in width, of alluvial formation. Its course is serpentine, and, from the circumstance of the region being nearly of a dead level, its current is ordinarily very sluggish. It is very liable to be so swollen by heavy rains as to overflow its banks, and extensively inundate the adjacent flats. Such an inundation almost uniformly succeeds the thawing of the snow in the spring, and not unfrequently occurs at all times in the year. From the frequent occurrence of new channels, occasioned by the abrasion of its alluvial banks on one shore, and deposits on the other, new channels are constantly forming, leaving beds of the old one isolated reservoirs of stagnant water, charged with copious deposits of decaying vegetable substances floated into

dam in 1796 was the *sine qua non* of the disease? A variety of testimony was produced by the parties, tending to convince the court and jury of the truth of the affirmative and negative of this question. It was proved that, in each of the years above mentioned, an unusual sickness had prevailed; that the whole number afflicted with the bilious fever was about 300; that this fever commonly began in July, and ceased in October; that the fever and ague had also been prevalent in the period aforesaid, but was not confined to place or season. It was also proved that there were upwards of fifty acres of low, marshy ground, on the west side of the river, opposite the town; that there was, in July and August, much stagnant water in and about those marshes; and it was contended (though the fact was doubtful) that the waters in and about those sunken places were materially affected by the raising of the dam. To prove that this state of the water, &c., might and probably would produce the fever, the opinion of physicians, and the existence of similar facts in other places, were resorted to.

"It was generally agreed by the medical gentlemen, that the bilious remitting fever, and fever and ague, of our country, are produced by marsh effluvia; that this effluvia is caused by animal and vegetable putrefaction; that the action of the sun on vegetables or animals, upon the receding of waters from them, frequently causes this putrefaction; and that the months of July and August are seasons peculiarly favorable for the production of this effluvia, and its operation upon the human constitution. It was also agreed that water, though stagnant, does not become dangerous till it is so fetid as to offend the senses; and that while vegetables and animals are covered with running water, they are innoxious. Of the physicians who had viewed this dam, and the mill-pond made thereby, with the circumstances and situation of the town, some were of the opinion that it was the cause of the sickness, while others doubted or disbelieved it. It was proved that the raising of the waters by mill-dams, in Salisbury, Colebrook, Roxbury, and in various places in the States of Massachusetts, Vermont, New York, and Pennsylvania, had been followed with fevers of the same type with that at New Milford. It was testified by a respectable physician, that he had visited a family in Kent, living on one of the highest hills, and that several persons in the house were severely afflicted with a bilious fever; that on examination he discovered a small pond, nearly dry, in which there was a great quantity of dead fish, producing a very loathsome stench; that the pond was speedily covered with fresh earth, and health was restored.

"It was contended by the plaintiff, that raising the dam would not be injurious, unless thereby more ground was overflowed from which effluvia would arise, and this was denied, since the water was now kept within the well-defined banks of the river; that the situation of the town was favorable to disease, being circumscribed by high hills, and consequently subjected to a bad state of air; and that there were causes sufficient, without resorting to the dam, to account for the fever. It was proved that, in the year 1796, as early as the 20th of July, there were many cases of the bilious fever, strongly marked; and that, at that time, the dam was not raised or altered from its usual height; that the same fever had existed in many preceding years, from 1782; that in 1799, after the destruction of the dam complained

them by successive inundations, being thus rendered sources of permanent deleterious exhalation.

"Situations circumstanced like those above described have been from time immemorial recognized as originating gaseous matter, having an agency in the production of intermittent fever and its kindred diseases. And although it is not cognizable to any of the senses, the existence of such an agent may be considered as indubitable, as, where such a state of things is found to exist, there a specific class of diseases is developed; and where that, or something analogous, does not exist, none of that class of diseases are to be found.

"Mill-dams on the Housatonic and its tributary streams, by forcing the water, for miles above their location, into low grounds, marshes, and coves, and thereby producing macerating reservoirs of vegetable substance, produce foci of pestiferous exhalations, to which intermittents, in all their grades and varieties, have been obviously traceable." [1]

of, and while it stood with the water at its ancient level, the same fever raged, though with less malignancy, and in situations more remote from the mill-pond. These were urged as sufficient to encounter the presumption arising from the facts previously stated.

"It was also proved that, in 1757, a malignant fever (as it was then denominated) raged, to the destruction of about forty inhabitants; that in 1777 the dysentery prevailed, said to have been brought from the army, and that the fever and ague had always been a disease of New Milford; that the towns through which the Housatonic River runs, have been frequently visited with bilious fevers, and that, too, where no mill-dams could be resorted to as the causes.

"The physicians concurred in opinion, that persons are seldom attacked with this fever more than once during an epidemic, but that the fever and ague frequently visits the patient in the spring or summer following. They also agreed, unanimously, that from 1793 or 4, fevers have been more frequent and malignant than in any preceding years, excepting that in the last season there appeared an abatement in the number of cases and violence of the disease.

"It was proved that the same disease with the one under consideration had prevailed in many places, in this and the States of New York and Massachusetts, within the last five years, where no mill-dams or ponds could have operated,—on the most elevated hills, and in situations heretofore deemed the most healthy; that in Great Barrington, and West Stockbridge, the disease appeared remote from the ponds, while the people in the vicinity of them enjoyed usual health. A respectable physician, from Sheffield, gave an account of a very distressing fever, which had prevailed there since 1795. That a mill-dam was erected in 1787, to which it was by many ascribed; yet he declared that, from 1787 to 1795, great health prevailed, though the dam, during that period, was as high as it has been since. He also said that, during the spring of 1799, the dam was lowered, and that the disease, the summer following, was much more mild.

"It was admitted that the exposing of vegetables or animals, or other substances capable of being reduced to sudden putrefaction, to the sun, by drawing off water, draining ponds, or clearing up low grounds, tended to produce disease: but certainty, or even connection, as to particular instances in which this consequence had followed, seemed scarcely attainable.

"It was obvious to all the hearers of this trial, that the more proof, the more doubt, and that the question grew perplexed by investigation. And so fully were the court and jury impressed with this idea, that they decided in favor of the owner of the dam, and gave damages accordingly; saying that they could not find it proved a nuisance."—*Memoirs of the Connecticut Academy of Arts and Sciences*, Vol. I, p. 131.

It is not strange that the court came to this decision. Sufficient observations had not then been made, with exactness, to afford the means of deciding the question intelligently; and especially in opposition to the wishes of interested parties. It is presumed that the opinions of physicians were formed from general information, not from exact facts.

[1] Holmes's Prize Essay, p. 46.

"That the stagnant water in Sheffield," says Dr. Buel, "and the sickness which prevailed there in 1796, already mentioned, and the other late sickly years, stand in the relation of cause and effect, is, I think, a position which no person, capable of reasoning, can withhold his assent to, after admitting and candidly considering the facts which I have stated. I am sensible that new facts were not wanting to confirm a belief, among physicians and philosophers, that marsh exhalations are a poison which most infallibly produces what are called bilious fevers. But, however astonishing it may appear, it is a fact, that many of the people who dwell in the vicinity of the stagnant waters of this town, and even those who have been the greatest sufferers in the several sickly years, disbelieve the local origin of their misfortunes, and strongly oppose all attempts to remove or lessen the force of their cause." [1]

"Near the village of Pittsfield, between forty and fifty years ago, a mill-dam was erected, which caused the water to *set back*, and cover over more than one hundred acres of land, then clothed with its native forest trees of soft maple, alders, red ash, and other timber and shrubs peculiar to low alluvial lands upon the streams. Soon afterwards all the timber perished; then commenced bilious fevers, and the fever and ague, as it was called. It was very sickly; many died, all were alarmed. The owner of the mill was prosecuted, and the dam destroyed. There have been no indigenous cases of intermittent within my residence here, say forty years. The sickness above mentioned ceased soon after the destruction of the mill-dam." [2]

Dr. Charles Seeger has stated that, "in 1792, when a company built the South Hadley Canal, between eight and ten miles below the centre of Northampton, to convey boats and rafts round the falls in Connecticut River, a dam was made at the head of the falls, eleven feet high, across the river, which raised the water for ten miles above about four feet higher than its common level. In consequence of this, the spring freshets flowed back much farther than before, and left large quantities of stagnant water when they withdrew. A great many of the inhabitants of this town, living and working near and amidst

[1] Holmes's Prize Essay, p. 72. [2] Ibid, p. 82.

these low, marshy places, were for several years afterwards afflicted with the fever and ague, a disease which was unknown in this town for more than sixty years. Several of the inhabitants instituted suits against the proprietors of these works, under the nuisance law, which compelled the latter, some years after, to remove the dam, and deepen the canal sufficiently to fill it without the aid of the dam. After removing this cause, its effect of course gradually ceased, and the town recovered its character of a healthy place. The facts as to the origin of the disease, and its continuation from 1799 to 1803, were proved during the repeated trials; and many cases coming under my observation, I was called upon to inform the court and jury of what I knew of the causes and treatment of this disease."[1]

1802. The yellow fever again appeared in Boston, near the lower end of Summer street, in the vicinity of Tileston's wharf, and about Fort Hill. About fifty died, eleven of whom were in one house. The origin of the disease was not satisfactorily accounted for. Some supposed it was imported; others, "that it arose from filth, consisting of putrid animal and vegetable matter collected near the wharves, or in a cellar in the neighborhood of the place where it commenced." The latter opinion was generally entertained. No case was known of its being communicated from the sick to the attendants.[2]

1804–5. A typhus of "uncommon malignity" appeared in Boston: fifteen died of the disease.

1805–1810. The spotted fever and other epidemics prevailed during this period in some parts of the State, though no very particular account has been published concerning them. In 1808, in Amherst, six cases were fatal. In one town in Worcester County, one hundred and thirty were sick, and two died. Of ninety-one cases in Barre, nine were fatal. On the 19th of March, 1810, a gentleman from Petersham wrote:—"The distress in this part of the county is beyond anything you can conceive. Seven men and women, and one child, were buried in Barre, this afternoon: sixty are now sick. Dr. Holmes told me that twenty physicians would not be too many for that town

[1] Letter of Charles Seeger, M. D.: Holmes's Prize Essay, p. 86.
[2] Communications, Massachusetts Medical Society, Vol. II, p. 469.

alone." The same disease spread in various other parts of the State.[1]

1812–1814. This period witnessed the introduction of a most fatal and alarming epidemic. It first appeared among the soldiers at Greenbush, opposite Albany, in October, 1812, and about the same time in Sackett's Harbor and Burlington. It afterwards spread through Vermont, New Hampshire, and Massachusetts. Dr. Gallup estimated that 6,400 persons died of the disease in Vermont alone, in five months, in a population of 217,913. In Boston, 60 deaths are recorded by typhus fever, in 1812 and 1813, and 81 of "pulmonic fever" in the same time,—probably by the same disease: 400 or 500 are said to have been sick. It attacked adults principally, and was generally fatal to old people. It prevailed very generally in Worcester, and many other country towns, though the records are too imperfect to afford very accurate information.[2]

1815–1816. This winter, a typhus fever of peculiar malignity, similar to that of 1812–1814, already noticed, and confining its attacks principally to old people, appeared in Sharon, in Norfolk County. In ten days, eighteen out of the first twenty-four cases terminated fatally. Many were afterwards sick, and many died. It spread into Mansfield, Wrentham, and other places in the southerly part of the State. In Attleborough, more than one hundred died of this disease in three months. In Rochester, fifty died. "It is stated, as a fact, that this epidemic followed the course of rivers, tracing up the Accushnet and Mattapoiset, to the great pond in Freetown, and extending but very little beyond the meetinghouse in Rochester, which has ever been one of the most healthy spots in New England, and where it is dry and sandy. Dr. Mann states, that scarce a person escaped this fever, who lived within a mile of the great pond in Sharon, where it prevailed so fatally. Six persons, of the family of Ashley, died of this fever in one house, situate near the great pond in Freetown. This

[1] Communications, Massachusetts Medical Society, Vol. II, p. 138; Gallup on Epidemics, pp. 53, 58.

[2] The works which afford some further information on this epidemic are: Gallup on Epidemics, p. 69; Mann's Medical Sketches; New England Medical Journal, Vol. II, p. 241, Vol. IV, p. 98; Lincoln's History of Worcester, p. 311; New Hampshire Journal, Vol. I, p. 23, and Vol. II, p. 199. See, also, Sanitary History of Franklin County, in appendix.

singular disease seems, therefore, to choose for its location humid and swampy situations." [1]

1819. The yellow fever again appeared in Boston, and created great alarm. The first victim was Patrick Murphy, an Irish laborer, who lived at the northerly end of Purchase, near Broad street. He died the third day after the attack, on the 30th of June. On the 3d of July, a female died, in the family of Josiah Bradley, on Fort Hill. On the 5th, Mrs. Thayer, (who kept a boarding-house in Purchase street, nearly opposite the present stone church,) her daughter and her son, were all attacked in the morning, and died before three o'clock the same day. Others died soon after. On the 1st of August, the ship "Ten Brothers" arrived, in a foul condition. Mr. Eaton, (the custom-house officer,) and two laborers, who boarded her, died the night after. By order of the Board of Health, the vessel was taken into the harbor and scuttled. The effluvia of the bilge-water that flowed from the vessel was exceedingly offensive; and two persons who scuttled her, and some others who happened to be passing in a sail-boat, took the disease and died. The alarm now became very great, and very many of the inhabitants removed from the city.

The disease was confined principally to the southeastern declivity of Fort Hill, in the vicinity of Purchase, High, and Griffin streets, and Gibbs' Lane. Many persons were on board the ship, after her arrival, most of whom remained in health. About twelve, however, were seized with the fever, almost all of whom died. They and a few others were sick and died in different parts of the town.

It is not certain how many were victims to this epidemic. On the town records, thirty-four deaths by this "malignant fever" are recorded, but this does not include the whole number. Patrick Murphy, according to the record, died in consequence of "drinking cold water;" and Mrs. Thayer and her family, by "diseases unknown." Probably others died of the disease, though not so entered. This was done, perhaps, to prevent alarm. The bills of mortality, for that year, state that 108

[1] 2 Massachusetts Historical Collection, Vol. IV, p. 303, and New England Medical Journal, Vol. V, p. 317.

died by "typhus," and 46 by "pulmonic fever," both of which may include some cases of yellow fever. One physician informs us that he attended seventy-five cases of this disease in that year. It was at first exceedingly malignant, and soon terminated in death; but gradually it became more and more mild and manageable, and entirely ceased about the 1st of November.

The cause of the disease was never satisfactorily ascertained. Some attributed it to the "Ten Brothers;" but this could not have been the original and principal cause, for it prevailed here a month before the arrival of that vessel. It undoubtedly arose from some local influence, which might have been aggravated by the foul condition of that ship, as it would have been by any other similar cause, combined with the peculiar condition of the atmosphere that then existed.

It is a remarkable fact, that the disease was never known to be communicated from one sick person, or from the clothing of such person, to another, notwithstanding exposure by nurses and others to the disease in the sick and the dead, except in a single instance; and concerning that there is some doubt. The poison existed in the atmosphere of the locality, and operated where the personal condition was favorable to its reception.[1]

1831–1832. In Boston, 70 died of Asiatic cholera in 1832. Of scarlatina, 84 died in 1831, and 199 in 1832. Typhus was also charged with 45 deaths. The cholera excited great alarm, and caused special preparations to be made in the city for its avoidance.[2]

On the 5th of August, 1832, at the State Prison in Charlestown, 190 were taken with cholera,—115 in the first twenty-four hours, the remainder soon after,—all of whom recovered.

For the last forty years, notwithstanding the mass of medical literature that has been published, less definite information has been obtained concerning epidemics than in the previous periods. The almost entire neglect of records, prior to the adop-

[1] New England Medical Journal, Vol. VIII, p. 380, and Vol. IX, p. 98.

[2] The sanitary expenses of the city of Boston, for 1832, were:—

For *Internal Health* Department, ...	$21,610 67
For *External Health* and Quarantine Establishment, . .	5,222 95
For Special Measures against the Cholera, about . .	23,600 00
Total, ...	$50,433 62

Boston Medical Journal, Vol. 9, p. 209.

tion of the registration system, renders it difficult to give any thing approximating to an accurate view of the subject. If a careful examination were made into the history of each town, many important facts might be gathered. But it is curious and lamentable to observe, in looking over our published local histories, how little attention has been paid to this matter. *The History of the Health of the People* should be regarded as the most important part of history, yet it has generally been considered unworthy of notice, or, if noticed at all, merely among the incidental matters of little consequence. It is hoped that hereafter more attention will be paid to this subject by our local historians, and that our local sanitary surveyors will make it a matter of particular investigation. The rapid, imperfect review we have taken of the sanitary history of the State,—containing, as it does, brief notices of some of the prominent epidemics merely,—suggests many important considerations, which, if more fully illustrated, might convey the most important practical lessons.

In some towns, records have been made, and especially since the registration law went into operation. From these and other sources of information we find that dysentery, typhus fever, scarlatina, consumption, and other fatal diseases, are common in nearly all parts of the State. They are constant visiters. In some periods and places more so than in others, but in all so common that they have become familiar to us, and cease to excite notice or alarm. An amount of sickness which formerly would have thrown the whole community into a state of consternation, may now occur as an ordinary event, and elicit no special attention.

To complete this general view of the sanitary condition of the State, and as further illustrations, we have compiled from the Registration Reports, from the "Bills of Mortality" of Boston, and from other sources of information, several tabular statements, which we shall now present. A general view of the *influences on human life and longevity*, existing in the State, is presented in the table, (p. 82,) which exhibits the rate of mortality among the inhabitants of Boston at three different periods; and among those of an interior town of the State, of an average health.

Statement of the Rate of Mortality among the inhabitants of Boston, for 1830, 1840 *and* 1845; *and of an interior country town in Massachusetts, for* 1830.

AGES.	POPULATION OF BOSTON.					Population of Country Towns.
	1830.	1840.	1845.			
	Both Sexes.	Both Sexes.	Males.	Females.	Both Sexes.	Both Sexes.
Under 5, -	8,068	11,522	7,234	7,214	14,448	1,249
5 to 10, -	6,106	8,956	5,690	5,668	11,358	1,036
10 to 15, -	5,501	7,221	4,708	4,928	9,636	963
15 to 20, -	6,903	8,841	5,199	5,750	10,949	1,013
20 to 30, -	16,182	22,960	15,009	14,586	29,595	1,791
30 to 40, -	9,070	12,675	10,455	9,526	19,981	1,129
40 to 50, -	5,019	6,707	4,991	5,038	10,029	752
50 to 60, -	2,569	3,561	2,142	2,618	4,760	488
60 to 70, -	1,316	1,640	1,062	1,406	2,468	356
70 to 80, -	504	673	315	578	893	241
80 to 90, -	140	212	73	148	221	86
Over 90, -	14	32	12	16	28	9
All ages, -	61,392	85,000	56,890	57,476	114,366	9,113
Deaths in Boston for 9 years.						Deaths for 10 Years.
Under 5, -	4,334	7,600	6,224	5,481	11,705	38.2
5 to 10, -	448	738	703	609	1,312	6.2
10 to 15, -	274	397	292	341	633	3.1
15 to 20, -	309	483	330	408	738	5.3
20 to 30, -	1,526	2,036	1,556	1,747	3,303	13.2
30 to 40, -	1,484	1,766	1,540	1,377	2,917	11.1
40 to 50, -	1,025	1,276	1,138	810	1,948	11.0
50 to 60, -	678	903	679	594	1,273	9.4
60 to 70, -	544	723	516	541	1,057	11.0
70 to 80, -	420	589	324	463	787	13.8
80 to 90, -	205	293	137	242	379	11.6
Over 90, -	41	54	28	47	75	2.1
All ages, -	11,288	16,858	13,467	12,660	26,127	136.0
Annual Mortality per cent.						
Under 5, -	5.96	7.32	9.55	8.44	9.00	3.05
5 to 10, -	.81	.91	1.37	1.19	1.28	.59
10 to 15, -	.55	.61	.68	.76	.72	.32
15 to 20, -	.49	.60	.70	.78	.74	.52
20 to 30, -	1.04	.98	1.15	1.33	1.24	.73
30 to 40, -	2.01	1.54	1.63	1.60	1.62	.98
40 to 50, -	2.24	2.11	2.53	1.78	2.15	1.46
50 to 60, -	2.93	2.81	3.52	2.52	2.97	1.92
60 to 70, -	4.58	4.89	5.39	4.27	4.75	3.08
70 to 80, -	9.24	9.71	11.42	8.89	9.78	5.72
80 to 90, -	16.21	15.33	20.82	18.10	19.04	13.48
Over 90, -	32.14	18.75	25.83	32.50	29.64	23.33
All ages, -	2.04	2.20	2.63	2.44	2.53	1.49
Living to 1 dth.	48	45	38	41	39	67

This important table has been compiled with great care, and will be found to represent the law of mortality in different places in Massachusetts, more accurately than any one heretofore published. The columns relating to Boston have been carefully compiled by a comparison of the population with the deaths for nine years; four before and four after that in which the enumeration was made. This admits of a fair average, and an accurate result. The column under "country towns" is compiled from a careful examination, abstract, and combination of the records of deaths in Concord and Worcester, Massachusetts, and in Amherst, N. H., for the ten years, 1826 to 1835, inclusive, with the abstract of the census of 1830. The records of those towns were at that time supposed to be full; and, though not the healthiest, may be considered, among the country towns, of about an average health. In many places, a comparison of the whole number of deaths with the population gives a much more favorable result, and in others not so favorable. This table deserves to be carefully studied. By it we may learn the liability to death at different ages, in the places specified. For all ages, the average rate of mortality for the last nine years, in Boston, was 2.53 per cent., or 1 in 39 of the whole population. In the country towns, in 1830, it was 1.49 per cent., or 1 in 67. In Boston, of those under five years of age, 9 out of every 100 died; while in the country, 3.05 only, or about one-third as many, of the same age, died. At other ages, also, a great difference may be seen between the rate of mortality in the city and country, and between one period and another. A comparison of the table with that of England (p. 34) will show a very near agreement of the health of our country towns with that of the most healthy districts in England, and of Boston with London.

The *influence of the seasons* upon health has universally been regarded as important. Some diseases prevail with more frequency and malignity at one season than at another. Persons at the extreme ages of life,—the young and the old,—and those of feeble health, are, however, most liable to be affected by the changes of the seasons. We have compiled the following statement, to show the extent of this influence in

this State. It gives the number of deaths in Boston, in each month, for the five years, from 1840 to 1845; distinguishing those under 15, those between 15 and 60, and those over 60 years of age; and those out of Boston, in the seven years covered by the Registration Reports, (1842–1848,) without distinction of age; and the proportion per cent. that each bears to the whole :—

Number of Deaths					Months.	In each 100 there Died				
In Boston, 1840 to 1845.				In State.		In State.	In Boston, 1840 to 1845.			
Under 15.	15 to 60.	Over 60.	Total.	7 years. All ages.		7 years. All ages.	Total.	Under 15.	15 to 60.	Over 60.
438	292	96	826	4,752	January,	7.52	7.93	4.21	2.80	.92
431	315	84	830	4,932	February	7.80	7.96	4.14	3.02	.80
373	306	87	766	5,351	March,	8.46	7.35	3.58	2.94	.83
421	322	100	843	5,041	April,	7.97	8.09	4.04	3.09	.96
425	330	101	856	4,599	May,	7.28	8.21	4.08	3.16	.97
356	291	82	729	4,398	June,	6.96	6.99	3.41	2.79	.79
475	296	75	846	4,946	July,	7.82	8.12	4.56	2.85	.71
698	335	64	1,097	6,032	August,	9.54	10.53	6.70	3.22	.61
671	327	88	1,086	6,614	Septemb.	10.46	10.42	6.44	3.14	.84
449	339	77	865	7,127	October,	11.27	8.30	4.31	3.25	.74
377	351	80	808	4,667	Novemb.,	7.38	7.75	3.62	3.37	.76
429	337	104	870	4,765	Decemb.,	7.54	8.35	4.12	3.23	1.00
5,543	3,841	1,038	10,422	63,224	Total,	100.00	100.00	53.21	36.86	9.93
1,242	913	267	2,422	15,035	Winter,	23.78	23.24	11.93	8.76	2.55
1,202	943	283	2,428	14,038	Spring,	22.21	23.29	11.53	9.04	2.72
1,844	958	227	3,029	17,592	Summer,	27.82	29.07	17.70	9.21	2.16
1,255	1,027	261	2,543	16,559	Autumn,	26.19	24.40	12.05	9.85	2.50
5,543	3,841	1,038	10,422	63,224	Total,	100.00	100.00	53.21	36.86	9.93

By this statement, it appears that the summer quarter (July, August, and September) is uniformly the most fatal, both in city and country; autumn stands next, winter next, and spring is least so. August and September are the most unhealthy months in the city, and October in the country. This arises from the greater prevalence in the city of diseases of the digestive organs, and in the country of fevers. The effects are, however, confined principally to persons under 15 years of age. And it is curious and important to observe that, to those over 60, these diseases are less fatal than to those of other ages. The winter and spring quarters are most fatal to diseases of the

organs of respiration, especially pneumonia, or inflammation of the lungs, and consumption. Old people and those of feeble health, also, suffer most, at this season. The importance of the subject will repay a careful inspection of the table, to learn the effect of mortality in each month, and in each class of ages.

The *influence of occupation* on health and longevity is worthy of consideration. The Registration Reports, from which we have compiled the subjoined statement, relating to those who died in the period to which they refer; the American Quarterly Register,[1] and other sources, furnish some information to illustrate the subject.

Of the *clergymen* who lived and died in Massachusetts, prior to 1825, the ages of 888 have been ascertained. Divided into periods, according to the time of their decease, the following is the result:—

		Aggregate Ages.		Average Age.	
90	who died prior to 1700	had 5,560	years.	61.77	years.
123	" 1700 to 1750	" 7,996	"	65.00	"
303	" 1750 to 1800	" 18,957	"	62.55	"
372	" 1800 to 1825	" 23,986	"	64.47	"
888	Totals,	56,499	"	63.62	"

The Quarterly Register (Vol. X, p. 39) gives the aggregate ages of 840 clergymen, who graduated at Harvard University, and died prior to 1835, at 53,447 years; 63.62 years being the average age: 41 in each 100 attained the age of 70. This corresponds very nearly with the preceding statement; 62½ years may be considered as the average age of clergymen, in this State, during the last century, and prior to 1825. In the quarterly lists of deaths of clergymen, as given in the fifteen volumes of the Register, prior to 1841, the ages of 147 in Massachusetts are stated, amounting in the aggregate to 8,642,—averaging 58.79; and of 167 in other New England States, amounting in the aggregate to 9,423,—averaging 56.42. The average age of 114, who died in the period covered by the Registration Reports, is given below, at 56.64 years. This shows an average decline in the longevity of clergymen, of seven years.

[1] The statistics of the churches and ministers are contained in several volumes. The fifteenth volume, page 500, contains a reference by which those of each county may be found. See, also, Vol. X, p. 39, and Vol. XIII, p. 75.

Physicians. It appears by the table (p. 58) that 194 members of the Massachusetts Medical Society, who lived and died in this State prior to 1840, and whose ages are known, died at the average age of 60.23 years; of whom 42 in Boston lived 53.59 years, and 134 in other parts of the State lived 64.04 years. Of 900 physicians who had then died in the State, the ages of 490 were known, and they averaged 57.35 years: 35 in each 100 attained the age of 70. For the seven years prior to May, 1849, there died 95 members of the Massachusetts Medical Society, whose aggregate ages amounted to 5,428,—averaging 57.13 years. The abstract of the Registration Reports, as stated, (p. 87,) gives 55 years as the average of 137 physicians, none of whom resided in Boston. This shows a decline, from the longevity of the old physicians, of over nine years.

David Bennett died in Rowley, Feb. 4, 1719, aged 103 years, 2 months, and 3 days. He never lost a tooth, and retained his senses to the last. Hezekiah Meriam, of Ward, who died in 1803, lived with his wife 78 years, and she survived him. John Crocker died in Richmond, May 1, 1815. And Edward Augustus Holyoke died at Salem, March 31, 1829, aged 100 years and 7 months. All these physicians lived beyond the age of 100 years.

Lawyers. Less means are at hand to illustrate the longevity of the legal profession, than the two others above noticed. The ages of 52 are given in the Quarterly Register, (Vol. XII, p. 47,) amounting to 2,428 in the aggregate,—averaging 46.68 years. Fifty-three are given, (p. 87,) whose average age was 55.47. It would seem that they lived rather a less number of years than those belonging to either of the other professions; though the number of observations is too small to found thereon a correct opinion.

The Registration Reports contain an abstract of the number and ages of all over 20 years, whose occupations are specified in the returns. We select and combine the facts in all the reports, relating to the following occupations, as further illustrations:—

	Occupations.	Agg. Ages.	Av. Age.		Occupations.	Agg. Ages.	Av. Age.
4737	Farmers,	313,606	64.89	46	Bakers,	1,961	46.69
39	Hatters,	2,293	58.79	81	Cabinet-makers,	3,629	44.80
110	Coopers,	6,313	57.39	73	Stone-cutters,	3,246	44.46
114	Clergymen,	6,457	56.64	17	Paper-makers,	753	44.29
55	Lawyers	2,940	55.47	902	Shoe-makers,	39,169	43.41
137	Physicians,	7,535	55.00	1609	Laborers,	68,858	42.79
287	Blacksmiths,	15,639	54.49	1061	Seamen,	45,070	42.47
613	Carpenters,	31,366	51.16	110	Painters,	4,657	42.36
323	Merchants,	16,386	50.73	138	Fishermen,	5,745	41.63
65	Tanners and Curriers,	3,244	49.90	115	Manufacturers,	4,656	40.48
135	Masons,	6,541	48.45	110	Mechanics,	4,095	37.20
213	Traders,	9,967	46.79	34	Printers,	1,255	36.91

Dr. Casper, of Berlin, Prussia, has calculated that the age of 70 was attained by 42 clergymen in 100, by 29 lawyers, by 28 artists, by 27 professors, and by 24 physicians. Dr. Madan, an English author, in comparing the average age of celebrated men of different classes, found that naturalists lived 75 years; philosophers, sculptors, and painters, 70; lawyers, 69; physicians, 68; and clergymen, 67.[1] These, probably, however, were select lives, and not the whole of the classes.

The *influence of domestic condition* on the sanitary welfare of the people is supposed to be great; and, to estimate this accurately, the age at marriage, and the ages at death of the married and widowed, should be ascertained and stated. From the Registration Reports we are enabled to give the following statements, showing the age, in Massachusetts, at which 12,949 men and 12,916 women were married for the first time, during the four years, 1844 to 1848; and at which 16,060 men and 15,969 women were married at all times, (including first, second, and subsequent marriages,) during the same period. To render the statement still more interesting, we have inserted similar facts concerning marriages generally in England, and first marriages in Belgium:—

[1] Traité D' Hygiène publique et privée; par Michel Lévy: tom. II, p. 737. Annales D' Hygiène, tom. XIV.

Ages.	First in Massachusetts.		All in Massachusetts.		All in England.		First in Belgium.	
	Males.	Females	Males.	Females.	Males.	Females.	Males.	Females.
Under 20,	249	3,688	257	3,909	537	2,711	757	2,685
20 to 25,	6,493	6,764	6,790	7,475	10,383	10,424	4,530	6,966
25 to 30,	4,654	1,934	5,283	2,545	5,103	3,951	9,420	8,067
30 to 35,	1,052	373	1,551	828	1,900	1,498	5,497	3,841
35 to 40,	346	100	775	481	944	739	2,488	1,719
40 to 45,	86	35	462	282	603	532	1,000	653
45 to 50,	39	11	320	201	371	273	340	225
50 to 55,	26	6	220	117	271	161	137	76
55 to 60,	2	3	146	67	147	69	56	27
Over 60,	2	2	256	64	178	79	72	38
All ages,	12,949	12,916	16,060	15,969	20,437	20,437	24,297	24,297
Av'age age,	25.71	22.61	28.27	24.50	27.30	25.35	29.47	27.47

From this statement, it appears that the average age at which men marry, for the first time, in Massachusetts, is 25.71 years; and women, 22.61 years. In England, the first marriage of men is at 25.45 years, and of women at 24.30; and in Belgium, of men at 29.47, and of women at 27.43. This shows that there is a difference in the ages at which females marry, between Massachusetts and England, of nearly two years; and between Massachusetts and Belgium, of five years. The average age of all marrying in Massachusetts, (either first or subsequent marriages,) is, of men, 28.27 years, and of women, 24.50; and in England, of men, 27.30, and of women, 25.35.

The last four Registration Reports give the number, aggregate ages, and average age, of all persons over 20 years, who, according to the returns, died unmarried, married, and widowed; and separately of males and females. Combining these facts, we obtain the following results:—

	Males.	Females.
Number that died unmarried, ...	1,655	1,984
Their aggregate ages, ...	59,292	90,482
Their average age, ...	35.82	45.60
Number that died in the married condition, .	4,920	5,373
Their aggregate ages, ...	268,725	240,569
Their average age, ...	54.61	44.77
Number that died in widowhood, . . .	1,051	2,909
Their aggregate ages, ...	77,720	214,318
Their average age, ...	73.94	73.67

By comparing this remarkable statement with the average age at first marriage, (see page 88,) and deducting that age from the age at which persons die in the married condition, we obtain the average length of the married life; and find it to be,—of men, 28.90 years, and of women, 22.16! And by deducting the average age of those who died in marriage from the average age of those who died in widowhood, we obtain the average length of the period of widowhood; and find it to be,—of men, 19.33 years, and of women, 28.90 years![1]

The *influence of disease* is the most important test of the sanitary condition of the State. We have accordingly prepared the accompanying table, (pp. 90, 91, 92,) to illustrate this part of our subject. It contains the number of deaths in Boston, by each known cause, for the 39 years,—1811–1849, inclusive,[2] divided into four periods; and those in the remainder of the State, for the seven years,—1842–1848, covered by the Registration Reports; and the proportion per cent. that the number by each known cause bears to all the causes, in the respective periods. There may be, and undoubtedly are, some errors in the returns from which this table is compiled, and allowances should therefore be made; but admitting our data to be generally correct, it will afford the means of judging, approximately, if not with entire accuracy, of the comparative prevalence of different diseases.[3] The diseases are classified according to the plan recommended by the Registrar General of England. The table relates to 57,948 specified causes of death in Boston, and 57,484 out of Boston; and they are divided into twelve groups of causes, to each of which we propose to allude.

[1] Some interesting information concerning the domestic condition of the population of Boston, may be found in the Census Report for 1845, pp. 57–63. The length of married life in the living individuals is there stated at 12.50 years.

[2] Errors are sometimes made by beginners in statistical inquiries, in dividing ages and periods of time; and it may be well to state what we understand to be the correct method. When we say from "20 to 30," we mean, from the end of the 20th year, or from the beginning of the 21st, to the end of the 30th, not the 29th. It is not 30 until that year is completed. "21–30" has the same meaning; the dash indicating that the years, at each end of it,—21 and 30,—are included; not from 21 to 30, or 21 to 30, which would exclude 21. When "to" is used between the numbers, it is understood to mean *from* one *to* the other; and hence it has a different meaning from the dash. So the period 1811–1820 means, from the beginning of the year 1811 to the end of 1820, and has the same meaning as from 1810 to 1820. From 20 to 30, and other divisions, are sometimes written in the form of a fraction,—thus, $\frac{20}{30}$; or thus, -25-, giving the number intermediate between the two periods. The middle of the century is the end of the moment when the 50th year ends, and before the 51st begins.

[3] Though this method of comparing diseases with diseases is interesting, yet it has its imperfections. It is more correct, when means exist to compare the number of deaths by each disease with the number of the living inhabitants. We are able at present, however, to make such a comparison in few places in Massachusetts, beside Boston.

Fatal Diseases and Causes of Death in Massachusetts.

Deaths in Boston in 39 years.				State. 7 years.	Causes of Death.	Per Ct. in State. 7 years	Per Centage in Boston.			
1810 to 1820	1820 to 1830.	1830 to 1840.	1840 to 1849.	1842 to 1848.		1842 to 1848.	1840 to 1849.	1830 to 1840.	1820 to 1830.	1810 to 1820.
7,522	9,554	15,077	25,795	57,484	Specified Causes,	100.00	100.00	100.00	100.00	100.00
1,192	2,037	4,155	8,148	15,839	1. Zymotic Diseases,	27.55	31.59	27.56	21.32	15.85
					Sporadic Diseases of					
2,204	1,584	2,121	3,606	7,467	2. Uncertain Seat, -	12.99	13.98	14.07	16.58	29.30
562	980	1,717	2,391	5,200	3. Nervous Organs, -	9.05	9.27	11.39	10.26	7.47
2,460	2,302	3,611	5,778	17,010	4. Respirative Organs,	29.59	22.40	23.95	29.33	32.70
24	90	215	446	1,105	5. Circulative Organs,	1.92	1.73	1.43	.94	.32
228	645	1,236	3,150	2,814	6. Digestive Organs,	4.90	12.21	8.20	6.75	3.03
9	30	22	77	261	7. Urinative Organs,	.45	.30	.14	.31	.12
64	132	214	408	654	8. Generative Organs,	1.14	1.58	1.42	1.38	.85
26	61	76	136	292	9. Locomotive Organs,	.51	.53	.50	.64	.35
3	17	30	61	92	10. Integumentive Org.	.16	.23	.20	.18	.04
379	420	645	635	4,414	11. Old Age, - -	7.68	2.46	4.28	4.40	5.04
371	756	1,035	959	2,336	12. Violent Causes, -	4.06	3.72	6.86	7.91	4.93
7,522	9,554	15,077	25,795	57,484	Totals,	100.00	100.00	100.00	100.00	100.00
					1. *Zymotic Diseases.*					
103	60	164	724	299	Cholera, - - -	.52	2.81	1.09	.63	1.37
19	89	298	473	1,042	Cholera Infantum, -	1.81	1.83	1.98	.93	.25
43	245	415	681	1,387	Croup, - - -	2.41	2.64	2.75	2.57	.57
4	66	52	320	677	Diarrhœa, - -	1.18	1.24	.34	.69	.06
111	363	390	955	2,413	Dysentery, - -	4.20	3.70	2.59	3.30	1.48
1	12	74	202	571	Erysipelas, - -	.99	.78	.49	.13	.01
110	133	124	167	-	Fever, - - -	-	.65	.32	1.39	1.47
2	5	13	7	13	" Intermittent,	.02	.03	.09	.05	.03
13	6	-	-	35	" Remittent, -	.06	-	-	.06	.17
623	458	680	1,664	5,222	" Typhus, -	9.09	6.45	4.51	4.79	3.28
78	184	326	344	513	Hooping Cough, -	.89	1.33	2.16	1.93	1.04
5	7	72	60	192	Influenza, - -	.33	.23	.48	.07	.06
28	332	341	587	417	Measles, - - -	.73	2.28	2.26	3.48	.37
30	48	972	1,500	2,933	Scarlatina, - -	5.10	5.82	6.45	.50	.40
6	8	214	345	106	Small-Pox, - -	.19	1.34	1.42	.08	.08
16	17	17	20	7	Syphilis, - - -	.01	.08	.11	.18	.21
-	4	3	99	12	Thrush, - - -	.02	.38	.02	.04	-
1,192	2,037	4,155	8,148	15,839	Totals,	27.55	31.59	27.56	21.32	15.85
					2. *Uncertain Seat.*					
13	37	40	50	70	Abscess, - - -	.12	.19	.27	.39	.17
61	36	211	518	204	Atrophy, - - -	.36	2.01	1.40	.38	.81
32	58	103	144	706	Cancer, - - -	1.23	.56	.68	.61	.42
44	82	132	266	163	Debility, - - -	.28	1.03	.88	.86	.58
193	237	321	428	1,420	Dropsy, - - -	2.47	1.66	2.12	2.48	2.57
12	8	4	1	16	Gout, - - -	.03	.30	.03	.08	.16
23	10	21	77	198	Hemorrhage, - -	.34	-	.14	.10	.31
1,587	883	983	1,738	3,687	Infantile Diseases, -	6.41	6.74	6.52	9.24	21.10
-	26	35	5	152	Inflammation, - -	.26	.02	.23	.27	-
-	-	2	-	38	Malformation, - -	.07	-	.01	-	-
69	77	65	33	359	Mortification, - -	.62	.13	.43	.31	.92
14	35	72	111	222	Scrofula, - - -	.39	.43	.48	.37	.19
153	83	96	127	130	Sudden Deaths, -	.23	.49	.64	.87	2.03
3	12	36	108	102	Tumors, - - -	.18	.42	.24	.12	.04
2,204	1,584	2,121	3,606	7,467	Totals,	12.99	13.98	14.07	16.58	29.30
					3. *Nervous Organs.*					
109	107	188	188	586	Apoplexy, - -	1.02	.73	1.25	1.12	1.45
22	73	98	130	440	Cephalitis, - -	.77	.50	.65	.76	.29
239	309	479	602	1,240	Convulsions, - -	2.16	2.33	3.18	3.24	3.18
-	38	72	64	75	Delirium Tremens, -	.13	.25	.48	.40	-
-	12	10	22	77	Epilepsy, - -	.13	.09	.07	.13	-
36	270	554	947	1,220	Hydrocephalus, -	2.12	3.67	3.67	2.83	1.14
14	22	20	17	131	Insanity, - - -	.23	.07	.13	.23	.19
30	113	132	205	953	Paralysis, - -	1.66	.79	.87	1.18	1.06
7	6	9	10	42	Tetanus, - - -	.07	.04	.06	.06	.09
5	30	155	206	436	Brain, &c., Disease of,	.76	.80	1.03	.31	.07
562	980	1,717	2,391	5,200	Totals,	9.05	9.27	11.39	10.26	7.47

Fatal Diseases, &c.—CONTINUED.

Deaths in Boston in 39 years.				State. 7 years.	Causes of Death.	Per Ct. in State. 7 years.	Per Centage in Boston.			
1810 to 1820.	1820 to 1830.	1830 to 1840.	1840 to 1849.	1842 to 1848.		1842 to 1848.	1840 to 1849.	1830 to 1840.	1820 to 1830.	1810 to 1820.
					4. *Respirative Org.*					
3	13	29	18	53	Asthma, - -	.09	.07	.19	.14	.04
-	-	6	54	117	Bronchitis, - -	.20	.21	.04	-	-
1,891	2,054	2,306	3,795	13,731	Consumption, -	23.39	14.71	15.30	21.50	25.14
2	47	47	40	170	Hydrothorax, -	.30	.16	.31	.49	.03
-	-	-	10	19	Laryngitis, - -	.03	.04	-	-	-
35	40	90	156	232	Pleurisy, - -	.40	.60	.60	.42	.46
436	580	1,072	1,635	2,534	Pneumonia, - -	4.41	6.34	7.11	6.07	5.79
93	43	35	33	51	Quincy, - -	.09	.13	.22	.45	1.24
-	25	26	37	103	Lungs, &c., Dis. of,	.18	.40	.17	.26	-
2,460	2,802	3,611	5,778	17,010	Totals,	29.59	22.40	23.95	29.33	32.70
					5. *Circulative Org.*					
-	8	5	-	20	Pericarditis, - -	.03	-	.04	.08	-
24	82	210	446	1,085	Heart, &c., Dis. of,	1.89	1.73	1.39	.86	.32
24	90	215	446	1,105	Totals,	1.92	1.73	1.43	.94	.32
					6. *Digestive Org.*					
5	27	32	13	149	Colic, - - -	.26	.05	.21	.28	.07
89	15	13	10	63	Dyspepsia, - -	.11	.04	.09	.16	1.18
6	162	360	529	889	Enteritis, - -	1.55	2.05	2.39	1.70	.08
1	9	15	46	86	Gastritis, - -	.15	.18	.10	.09	.01
8	12	5	12	71	Hernia, - -	.12	.05	.03	.13	.11
-	-	1	1	64	Intussusception, -	.11	-	.01	-	-
-	5	-	-	68	Peritonitis, - -	.12	-	.01	.05	-
39	83	230	564	240	Teething, - -	.42	2.19	1.86	.87	.52
-	-	-	112	68	Ulceration, - -	.12	.43	-	-	-
21	26	56	55	49	Worms, - -	.09	.21	.36	.27	.28
3	132	336	1,624	633	Organs, Dis. of, -	1.10	6.30	2.23	1.90	.04
25	18	-	1	34	Hepatitis, - -	.06	-	-	.19	.33
30	34	26	41	103	Jaundice, - -	.18	.16	.17	.36	.40
1	70	112	142	296	Liver, Dis. of, -	.51	.55	.74	.73	.01
-	2	1	-	1	Spleen, Dis. of, -	-	-	.01	.02	-
228	645	1,236	3,150	2,814	Totals,	4.90	12.21	8.20	6.75	3.03
					7. *Urinative Org.*					
-	3	5	16	71	Diabetes, - -	.12	.06	.03	.03	-
6	21	7	18	77	Gravel, - -	.13	.07	.05	.22	.09
3	6	10	43	113	Kidneys, &c., Dis.of,	.20	.17	.06	.06	.03
9	30	22	77	261	Totals,	.45	.30	.14	.31	.12
					8. *Generative Org.*					
63	121	197	389	601	Childbirth, - -	1.04	1.51	1.31	1.26	.34
1	11	17	19	53	Organs, Dis. of, -	.10	.07	.11	.12	.01
64	132	214	408	654	Totals,	1.14	1.58	1.42	1.38	.35
					9. *Locomotive Org.*					
20	40	46	60	116	Rheumatism, -	.20	.23	.30	.42	.27
6	21	30	23	9	Joints, Dis. of, -	.02	.11	.20	.22	.08
-	-	-	18	24	Hip, Dis. of, - -	.04	.07	-	-	-
-	-	-	30	143	Spine, Dis. of, -	.25	.12	-	-	-
26	61	76	136	292	Totals,	.51	.53	.50	.64	.35
					10. *Integumentive Organs.*					
1	2	23	37	54	Ulcer, - - -	.09	.14	.15	.02	.01
2	15	7	24	38	Skin, &c., Dis. of,	.07	.09	.05	.16	.03
3	17	30	61	92	Totals,	.16	.23	.20	.18	.04
379	420	645	635	4,414	**11. Old Age, -**	7.68	2.46	4.28	4.40	5.04

Fatal Diseases, &c.—CONTINUED.

Deaths in Boston in 39 years.				State. 7 years.	Causes of Death.	Per Ct. in State.	Per Centage in Boston.			
1810 to 1820.	1820 to 1830.	1830 to 1840.	1840 to 1849.	1842 to 1848.		7 years. 1842 to 1848.	1840 to 1849.	1830 to 1840.	1820 to 1830.	1810 to 1820.
					12. *Violence.*					
86	139	216	314	743	Accidents, -	1.29	1.22	1.44	1.45	1.15
42	86	123	86	204	Burns and Scalds,	.35	.33	.82	.90	.56
119	188	197	213	811	Drowned, - -	1.42	.33	1.31	1.97	1.58
5	1	9	1	-	Executed, - -	-	-	.05	.01	.07
-	4	2	-	3	Frozen, - -	.006	-	.01	.04	-
7	10	8	22	4	Heat, - -	.007	.09	.05	.11	.09
1	-	-	-	-	Hydrophobia, -	-	-	-	-	.01
65	257	345	200	262	Intemperance, -	.45	.78	2.23	2.69	.86
-	-	-	-	1	Lightning, -	.001	-	-	-	-
-	-	-	-	3	Malpractice, -	.006	-	-	-	-
6	8	5	14	17	Murdered, -	.03	.05	.03	.09	.08
6	6	16	11	39	Poisoned, - -	.07	.04	.11	.06	.08
-	-	-	3	-	Starved, - -	-	.01	-	-	-
5	7	8	13	18	Suffocated, -	.03	.05	.06	.07	.07
29	50	106	82	231	Suicide, - -	.40	.32	.70	.52	.38
371	756	1,035	959	2,336	Totals,	4.06	3.72	6.86	7.91	4.93

1. The *Zymotic*,[1] or epidemic, endemic, and contagious diseases, or causes of death. The extent to which these diseases prevail is the great index of public health. When the proportion is comparatively small, the condition of public health is favorable; when large, it is unfavorable. If, as a class, these diseases are found to decrease, it must be inferred that the general health of the people is improving; if otherwise, that it is growing worse. Let us look at the table, and see how stand the facts.

It appears, by an inspection of the right-hand columns, that in Boston, in the first period, 15.85 per cent. of the causes of death were in this class; in the second period, 21.32 per cent.; in the third period, 27.56 per cent.; and in the fourth period, 31.59 per cent.; showing the remarkable fact, that these causes of death have doubled in the city within the last thirty years, and that the public health has been constantly growing worse. In the country, the proportion is 27.55 per cent.;—nearly the same as it was in Boston in the period, 1830 to 1840,—a more unfavorable condition than has been generally supposed to exist. By an inspection of the facts concerning the different diseases of this class, it will appear that nearly all of them have somewhat increased; but

[1] This and several other medical terms will be explained in the appendix.

those which exhibit the greatest difference, are dysentery, cholera infantum, and other diseases of the digestive organs, and scarlatina,—diseases which press most heavily upon infancy and childhood. *Scarlatina*, that dreadful enemy of the young, has increased from 30, in the period 1810 to 1820, to 972 and 1500, in the periods 1830 to 1840, and 1840 to 1849; or from forty hundredths of one per cent. to 6.45 and 5.82 per cent.! This disease, also, is the second of the class in fatality in the country! *Small-pox*, too, has increased, in the same time, from 6 to 345, or from .08 to 1.34 per cent.! It is not creditable to the age that it has permitted that disease to slay nearly half as many persons in the first four months of the present year, as it did in the great epidemic of 1792, before the preventive remedy of vaccination was known. *Typhus fever* (under which is included typhoid, nervous, and continued fevers) does not seem to exhibit a comparative increase in Boston, though always a formidable disease; but in the country it is the leading disease of this class. It is most fatal in September and October. In some known localities, in some kinds of seasons, it is almost sure to make its appearance. That 9.09 out of every 100 deaths, in the country towns, should be produced by this fever, is a fact that should arrest attention to ascertain its cause and the means of prevention. The information which may be derived from a more particular examination of the table, will compensate for devoting more time to it. When the Registration Report for 1849 is published, it will probably show a large increase in most of the zymotic diseases.

2. In the *Diseases of Uncertain Seat*, the greatest number appear against "infantile;" and there is an *appearance* of a proportional decrease in Boston, since 1811–1820. But this should be ascribed partly to more accurate records, which have transferred to other definite causes, some which were previously entered under the indefinite term, infantile. For the same reason, the number should be still further reduced. *Dropsy* and *Cancer* seem to be the most prominent diseases. About one-eighth of all the deaths in Boston, and in the State, for the last nine years, have been assigned to this class.

3. The *Diseases of the Nervous Organs* have prevailed in

about the same proportion at the different periods. The annual number of deaths by *Hydrocephalus*, which principally affects children surrounded by bad sanitary influences, has nearly doubled in Boston within the last thirty years.

4. The *Diseases of the Respiratory Organs* furnish one of the largest classes of causes of death; and, in this class, consumption and pneumonia (inflammation of the lungs, or lung fever) are preëminent.

Consumption, that great destroyer of human health and human life, takes the first rank as an agent of death; and as such, we deem it proper to analyze more particularly the circumstances under which it operates. Any facts regarding a disease that destroys *one-seventh* to *one-fourth* of all that die, cannot but be interesting.

We have compiled the following table, to illustrate the influence of the *seasons* upon this disease. The Registration Reports, from which the facts relating to Massachusetts are derived, admit of classifying the sexes for four years only. The months are given for both sexes, in all the reports. We have added Boston for 1849,—the only year in which the abstracts specify the months,—and New York for six years:—

Months.	Massachusetts—except Boston.			Boston.	New York.
	7 years. 1842—1848. Both sexes.	4 years. 1845—1848.		1 year—1849.	6 years. 1838—1843. Both sexes.
		Male.	Female.		
January,	1,113	273	446	68	888
February,	1,134	296	439	43	865
March,	1,248	317	484	57	923
April,	1,242	306	484	75	917
May,	1,195	273	463	50	799
June,	1,084	270	410	49	711
July,	1,159	302	434	62	698
August,	1,197	315	474	56	718
September,	1,270	315	498	45	745
October,	1,198	286	470	34	766
November,	1,060	277	417	50	690
December,	1,127	272	439	65	751
Total,	3,502	3,502	5,458	654	9,471
Winter,	3,495	886	1,369	168	2,676
Spring,	3,521	849	1,357	174	2,427
Summer,	3,626	932	1,406	163	2,161
Autumn,	3,385	835	1,326	149	2,207

This statement shows that, in this State, the seasons do not exercise much influence upon the disease, especially in its terminating period. As in other diseases, the largest number of deaths occur in September; though in March and April they are nearly the same. In November, and the autumn quarter, the smallest number occur. This seems to be the general law in New York and London, as well as in Massachusetts. It has been supposed, however, that in no season are the seeds of the disease more extensively planted than in the autumn and winter. Spring has usually been considered the most unfavorable, though accurate statistical investigation does not prove it. The duration of the disease varies very much in different persons and under different circumstances; and death may take place in any month, without reference to the time of its commencement. It would be useful to learn the influence of the seasons upon the *causes*, rather than the termination, of this disease.

Age and *sex* have a greater influence, in modifying the operations of this disease, than the seasons, as will appear from the following statements, relating to this State, and to the cities of New York, Philadelphia, and London:—

Ages.	Massachusetts.			New York City. 6 years. 1838—1843.		New York State. 2 years. 1847, 1848.		Philadelphia. 10 years 1836-45.	London. 4 years. 1843—1846.	
	7 years. 1842-48.	4 yrs. 1845-48.								
	Both sexes.	Male.	Fem.	Male.	Fem.	Male.	Fem.	Both sexes.	Male.	Fem.
Under 1,	396	172	151	110	93	116	144	240	593	583
1 to 2,	255	97	79	123	119	87	82	194	491	525
2 to 5,	208	65	79	157	136	84	70	247	344	378
Under 5,	859	334	309	390	348	287	296	681	1,428	1,486
5 to 10,	192	62	82	107	101	56	74	142	350	439
10 to 15,	304	68	142	52	82	48	110	102	263	389
15 to 20,	1,065	182	518	158	245	146	367	405	757	895
20 to 30,	3,368	708	1,409	959	1,165	631	1,010	2,124	3,199	3,167
30 to 40,	2,412	567	945	1,065	949	417	572	1,815	3,478	2,999
40 to 50,	1,649	431	610	812	498	339	372	1,180	2,819	2,004
50 to 60,	1,241	338	453	443	254	289	302	592	1,644	1,027
60 to 70,	1,239	364	423	260	163	257	286	405	723	471
70 to 80,	1,062	310	365	67	79	220	260	183	145	86
Over 80,	320	79	128	37	27	86	71	37	18	11
Total,	13,711	3,443	5,384	4,350	3,911	2,776	3,720	7,666	14,824	12,964
Und. 15,	1,355	464	533	549	531	391	480	925	2,041	2,314
15 to 60,	9,735	2,226	3,935	3,437	3,111	1,822	2,623	6,116	11,897	10,092
Over 60,	2,621	753	916	364	269	563	617	625	886	568

This important table shows that this disease takes its subjects principally at the productive period of life,—15 to 60,—the most precious and most useful season. In the ages 20 to 30,—"the beauty and hope of life,"—far more die than at other ages. In more advanced life, however, it selects its victims in nearly the same proportion from the same number of living individuals.

It seems to be partial, too, in this State, in its selection from the sexes. It appears from the table that, at the ages 20 to 30, the number of females who die of consumption is nearly double that of the males,—being 1409 of the former to 708 of the latter. At the ages 30 to 40, the next in the number of its victims, it also selects from the sexes in nearly the same proportion. The operation of the disease does not seem to be the same in the country as it is in cities, as will appear from the following statement:—

Places.		Both Sexes.	Males.	Females.	Proportion of each.
Massachusetts,	4 years,	8,827	3,443	5,384	as 39.01 to 60.99
New York City,	7 "	9,606	4,938	4,668	" 51.41 " 48.59
" " State,	2 "	6,715	2,827	3,888	" 42.08 " 57.92
Philadelphia,	10 "	7,666	3,851	3,815	" 50.23 " 49.77
London,	4 "	27,788	14,824	12,964	" 53.35 " 46.65
England,	1 "	52,136	24,048	28,088	" 46.13 " 53.87

These remarkable facts show that, while the disease destroys more males than females in the cities of New York and London, it destroys nearly the same of both sexes in Philadelphia. In the country towns in Massachusetts, the proportion of the sexes is as 39.01 males to 60.99 females; in New York, it is as 42.08 to 57.92; and in England, except London, it is as 46.13 to 53.87. A difference appears in all the ages over 20. It would seem, from these facts, that some causes exist in country towns to extend the disease among females; while different causes exist in cities, to aggravate the disease in the other sex.

The influence of *occupation*, *place of birth*, *personal habits*, and *hereditary tendency*, is worthy of investigation, but it is here omitted.[1]

We next desire to ascertain the influence of *locality* on the disease; and for this purpose have compiled the following state-

[1] See some interesting information on this subject, in Annales D' Hygiène publique, tom. XI, p. 5.

ment, showing its prevalence in each county in the State, in the period, 1842–1848. We have arranged the counties into four divisions: the four western; the three middle; the six eastern and southern, bordering on the ocean, exposed to the easterly winds; and the metropolis. In each we have given the whole number of deaths by all causes, and the number by consumption; and the proportion the latter bears to the former:[1]—

Places.	Periods.	All Causes.	Consumption.	In 100.	1 in
Berkshire,	7 years, 1842–1848,	3,055	559	18.29	5.43
Franklin,	" "	2,270	492	21.67	4.61
Hampshire,	" "	3,226	672	20.83	4.80
Hampden,	" "	3,252	675	20.75	4.81
	Totals,	11,803	2,398	20.31	4.92
Worcester,	7 years, 1842–1848,	11,269	2,373	21.05	4.74
Middlesex,	" "	12,564	2,584	20.56	4.87
Norfolk,	" "	5,049	1,028	20.36	4.91
	Totals,	28,882	5,985	20.72	4.82
Essex,	7 years, 1842–1848,	10,721	2,578	24.04	4.15
Plymouth,	" "	3,680	802	21.79	4.58
Barnstable,	" "	2,441	622	25.48	3.92
Bristol,	" "	4,599	972	21.13	4.73
Dukes & Nantucket,	" "	1,489	359	24.11	3.87
	Totals,	22,930	5,333	23.25	4.29
State, exclusive of Boston,	7 years, 1842–1848,	63,615	13,716	21.08	4.63
Boston,	10 years, 1810 to 1820,	8,470	1,891	22.32	4.47
"	" 1820 to 1830,	11,470	2,054	17.82	5.58
"	" 1830 to 1840,	16,414	2,306	14.04	7.11
"	9 years, 1840 to 1849,	26,127	3,795	14.10	6.88
Salem,	5 " 1768 to 1773,	642	117	18.22	5.49
"	10 " 1799 to 1808,	1,932	483	25.00	4.00
"	10 " 1818 to 1828,	2,178	527	24.19	4.13
Lowell,	13 " 1836 to 1848,	6,168	929	15.03	6.63

It appears, from this statement, that the proportion of deaths in the four western counties, by consumption, does not vary

[1] In this statement are included 5,935 deaths,—about one-tenth of the whole,—returned without a specified cause. Some of these were by consumption. If they had been included, it would have given an increased proportion to this disease. It is probably really larger than here represented. The *still-born* deaths are excluded from all tables in this work, as they should always be in estimating *relative mortality*.

much from that on the sea-coast; a fact that has been supposed not to exist. In Suffolk and Middlesex Counties, diseases affecting the digestive organs prevail in greater proportions than in other parts of the State; and this fact will produce an apparently less number in the proportion by consumption.

It thus appears that this dreadful disease is a constant visiter in all parts of our Commonwealth,—on the mountains of Berkshire, and in the valley of the Connecticut, as well as along the sea-coast. The occasional visit of the cholera, or some other epidemic disease, creates alarm, and precautionary measures are adopted for prevention. But where is the alarm and precaution against a more inexorable disease, which, in this State, in every day in every year, deprives more than *seven* human beings of their lives? Over this disease curative skill has little or no power. It generally goes on, from its commencement to its termination, uncontrolled and uncontrollable by any remedies as yet discovered. Cholera, typhus, scarlatina, though terrible in themselves, when compared with this disease, are far less so in fatality. *But it may be avoided*, before it attacks. Its onset and its development may be prevented. And if it is ever to be ameliorated or eradicated, it can only be done by prevention, and not by cure. May the people be wise in time to learn the causes and apply the proper remedies to avert this greatest of calamities,—the invasion of consumption!

The average population of Boston, in the periods covered by the table, was, in 1810–1820, 38,642; in 1820 to 1830, 52,345; in 1830 to 1840, 73,196; and in 1840 to 1849, 111,429. The deaths by consumption in those periods were 1,891; 2,054; 2,306, and 3,795; or, an annual average proportion of 1 death in 204 living persons in the first, 1 in 254 in the second, 1 in 317 in the third, and 1 in 264 in the fourth; showing a comparative decline from 1810–1820 to 1830–1840, but an increase since that period. In New York, for the six years, 1838–'43, there was, on the average, annually, one death by consumption to 194 inhabitants; in Philadelphia, in the ten years, 1836–'45, 1 in 284; and in London, in the four years, 1838–'42, 1 in 205.

We subjoin some additional facts respecting this disease in places without this Commonwealth :—

Places.	Periods.	All Causes.	Consumption.	In 100.	1 in
Portsmouth, N.H., 19 yrs.	1801–'11, 1818–'25,	2,367	471	19.81	5.02
" 3 "	1829, '30, '32,	329	72	21.88	4.58
Providence, 5 "	1841–'45,	3,032	718	23.68	4.22
New York City, 10 "	1811–'20,	25,896	6,061	23.40	4.27
" " " 10 "	1821–'30,	42,816	8,010	18.70	5.34
" " " 10 "	1831–'40,	68,965	13,415	19.45	5.14
" " " 5 "	1841–'45,	43,084	7,437	17.28	5.79
" " Country, 2 "	1847, '48,	24,378	6,715	25.00	4.00
Philadelphia, 10 "	1811–'20,	23,582	3,629	15.38	6.49
" 10 "	1821–'30,	37,914	5,522	14.56	6.86
" 10 "	1831–'40,	49,678	7,070	14.23	7.02
" 5 "	1841–'45,	27,238	3,959	14.53	6.88
Baltimore, 10 "	1821–'30,	18,099	2,810	15.52	6.44
" 10 "	1831–'40,	23,878	3,778	15.82	6.32
" 5 "	1841–'45,	12,618	2,450	19.41	5.15
Charlestown, S.C., 9 "	1822–'30,	7,523	1,139	15.14	6.60
" 10 "	1831–'40,	6,663	968	14.63	6.88
" 5 "	1841–'45,	2,974	475	15.97	6.26
England, 5 "	1838–'42,	1,734,435	297,390	16.10	6.20
London, 8 "	1840–'47,	397,871	57,047	14.33	6.97
" 8 years Winter Quarters,		106,713	14,581	13.66	7.31
" 8 " Spring "		89,965	14,978	16.64	6.00
" 8 " Summer "		92,538	13,927	15.05	6.64
" 8 " Autumn "		108,655	13,561	12.48	8.01
Paris, 4 yrs.	1816–'19,	85,339	15,375	18.01	5.55
Geneva, 2 "	1844–'45,	2,936	296	10.08	9.91
Hamburgh, 6 "	1833–'38,	27,257	5,224	19.16	5.22
Berlin, 10 "	1830–'39,	73,216	12,800	17.48	5.71
Stuttgard, 10 "	1828–'37,	4,356	924	21.21	4.71

We might extend this statement, and show the prevalence of this disease in the milder climates of the West Indies, and on the sunny shores of Italy; and demonstrate how fruitless, generally, are the attempts to arrest its ravages. It is stated that, "of thirty-five consumptive patients who went to Madeira in 1821, two-thirds died at sea; three died in the first month after their arrival; five or six survived the winter, and about the same number survived the following spring; three or four lived to the second winter; but, of the whole number, there

were but thirteen living in 1824. The grave-yards of Rome, Naples, Marseilles, Pisa, Nice, and Malta, bear ample testimony to the fatality of this disease among those who have been induced to seek a foreign clime in the vain hope of recovery." [1]

5. The *Diseases of the Circulative Organs* are principally confined to those affecting the heart. These seem to have increased, both in the State and in Boston. In the latter, from .37 to 1.73,—more than 500 per cent.

6. The *Diseases of the Digestive Organs* embrace a very large class. Some may be zymotic or sporadic, as circumstances occur by which they are developed. The zymotic diseases, affecting these organs, are cholera, cholera infantum, diarrhœa, and dysentery; and the principal diseases of the sporadic class, as they appear in the tables, are enteritis, or inflammation of the bowels, teething, and the undefined diseases of these organs. The whole of both classes, in the table, may be stated as follows:—

	STATE.		CITY.	
	Number.	Proportion.	Number.	Proportion.
Zymotic Diseases,	4,431	7.71	2,472	9.68
Sporadic Diseases,	2,814	4.90	3,150	12.21
Total,	7,245	12.61	5,622	21.89

This statement shows that these diseases cause 12.61 per cent., or about one-eighth, of the deaths in this State, and 21.89, or about one-fifth, in Boston.

The influence of seasons and ages is greater in these diseases than in any other class, as will appear from the statement on the next page.

This table illustrates, in a remarkable manner, the modifying influences of the seasons and ages upon the diseases specified. When it is known how dangerous the months of July, August, September, and October, are to children, we should be especially taught to guard against all the causes which, at that time, excite these diseases.

[1] British and Foreign Medical Review, Vol. XXIV, p. 107.

Months.	Cholera.	Cholera Infantum.	Diarrhœa.	Dysentery.	Total.	Ages.	Cholera.	Cholera Infantum.	Diarrhœa.	Dysentery.	Total.
January,	7	4	4	19	34	Under 1,	28	469	254	341	1092
February,	3	5	6	8	22	1 to 2,	20	246	122	377	765
March,	7	6	17	13	43	2 to 5,	14	47	63	372	496
April,	6	7	17	12	42	5 to 10,	8	8	20	119	155
May,	9	10	17	14	50	10 to 20,	11	-	11	86	108
June,	9	19	20	23	71	20 to 30,	14	-	21	97	132
July,	40	93	73	165	371	30 to 40,	17	-	14	69	100
August,	72	275	179	544	1070	40 to 50,	15	-	8	73	96
September,	25	184	170	660	1039	50 to 60,	23	-	18	73	114
October,	10	55	65	281	411	60 to 70,	32	-	14	57	103
November,	2	19	20	38	79	70 to 80,	20	-	26	75	121
December,	6	7	14	20	47	Over 80,	17	-	16	42	75
Total,	196	684	602	1797	3279	Total,	219	770	587	1781	3357

7. The *Diseases of the Urinary Organs* do not constitute a large class, and in neither period amount to one per cent. Gravel and diabetes are the most numerous of the class.

8. The *Diseases of the Generative Organs* are an important though not a large class. Cases of puerperal fever are classed under the diseases of child-birth; and they have been in nearly the same proportion in all periods of our history, in Boston and in the country.

9. The *Diseases of the Locomotive Organs.* Rheumatism, or rheumatic fever, has occasioned the greatest number of deaths. Spinal diseases are also increasing.

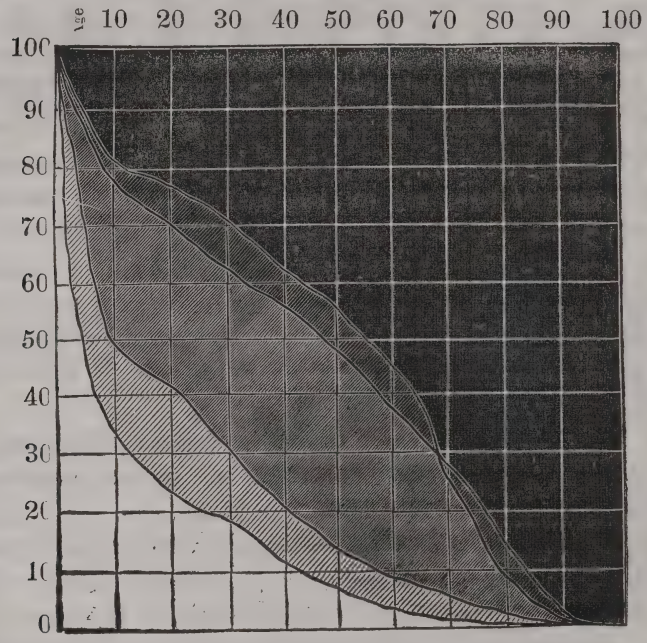
10. The *Diseases of the Integumentive Organs* have caused about the same uniform proportion. *Ulcers* are stated to have produced more deaths than all other diseases of this class.

11. *Old Age* has fewer deaths, in proportion to the whole, to record among its victims now, than at the former periods of our history. In Boston, in 1810 to 1820, it destroyed 5.04 per cent.; in the last period, only 2.46; a decrease of more than one-half.

12. The *Deaths by Violence* are nearly as great in the country as in Boston, though the proportional numbers vary in both places. Accidents and drowning are the most numerous causes. Burns and scalds, intemperance and suicide, cause nearly the same proportions.

The following are some of the many important conclusions to which the facts thus far disclosed lead us:—

1. *It is proved* that there is a great difference, in this State, in the longevity of people living in different places and under different circumstances. This fact is presented in a forcible manner in the subjoined illustration, taken from the Census of Boston, (p. 158.) The cut is drawn in ten divisions, each way; those from left to right representing the ages of life; those from top to bottom, the per centage of survivors:—



Take one hundred persons from each of four different classes of people: 100 of those who enjoy an amount of life equal to the healthy classes in England; 100 of those who died at Newton, in 1810 to 1830; 100 of those who died in Boston, in 1840 to 1845; and 100 of the Catholics of Boston. If each of the hundred persons in all these classes had lived 100 years, each class would have enjoyed 10,000 years of life. But persons die at all ages, and in some classes very much earlier than in others. Accordingly four lines are drawn diagonally

across the cut, from the top on the left to the bottom on the right, to represent the amount of life that each class enjoyed. The white and shaded spaces below these lines represent life, and the dark and shaded spaces above the lines represent death. The upper line represents the survivors in England; the next below, those in Newton; the third, the general population of Boston; and the fourth, the Catholics. It will be perceived that 82 per cent., or 82 out of every 100, of the lives in England pass the line of 10 years, or survive that age; while only 34 per cent., or 34 out of every 100 Catholics, pass the same line! That 38.75 per cent., in Newton, survived 60 years, while only 9.95, in Boston, survived the same age! Other comparisons, equally striking, may be made.

2. *It is proved* that causes exist in Massachusetts, as in England, to produce premature and preventable deaths, and hence unnecessary and preventable sickness; and that these causes are active in all the agricultural towns, but press most heavily upon cities and populous villages.

3. *It is proved* that measures,—legislative, social and personal,—do not at present exist, or are not so fully applied, as they might be, by the people, for the prevention, mitigation, or removal, of the causes of disease and death.

4. *It is proved* that the people of this State are constantly liable to typhus, cholera, dysentery, scarlatina, small-pox, and the other great epidemics; and to consumption, and the other fatal diseases, which destroy so many of the human race in other parts of the world.

5. *It is proved* that the active causes of disease and death are increasing among us, and that the average duration of life is not as great now as it was forty or fifty years ago.

We are fully aware that the general opinion does not coincide with this fact, and that a directly opposite one has been expressed. It has been frequently said, that, owing to the different modes of living, the increased medical skill, and other causes, diseases have been ameliorated, and the average length of human life has been extended; and particularly within the last fifty years. We have long thought differently, especially in regard to the more recent periods of our history. Those who

make this assertion seem to rely upon imperfect or uncertain data to support their opinion. Statistical observations of the living and the dead, gathered in ancient times, should be taken with great caution as comparative tests. Ten years since, it was said that "the average value of life is not as great as it was twenty years ago; that it was at its maximum in 1810 to 1820; and that it has since decreased."[1] Subsequent investigations have fully established the correctness of this statement.

Taking the mean duration of life as our guide, it appears that the average age of all that died in Boston, in 1810 to 1820, was 27.85 years, while in 1840 to 1845 it was 21.43 years only, showing a difference of 6.42 years. In New York, in 1810 to 1820, it was 26.15 years, and in 1840 to 1843 it was 19.69,—a difference of 6.46 years. In Philadelphia, in 1810 to 1820, it was 26.25, and in 1840 to 1844 it was 22.01, —a difference of 4.24 years. If the more recent and last years were included, it would show a still further decline.

Taking a comparison of the number of the whole population out of whom one may die annually, as our guide, it appears from the table, (p. 82,) that, in Boston, in 1830, the deaths were 1 in 48, and in 1845 they were 1 in 39. Compare the annual mortality per cent. of the different ages, (an undoubted test,) and it appears that, in those under 5 years of age, 5.96 per cent. died in 1830, 7.32 in 1840, and 9 in 1845; nearly doubling in less than 20 years; and, in all the years under 40, there also appears an increased mortality.

We have shown (pp. 85, 86) that neither clergymen nor physicians live as long now as they did during the last century; and within the last thirty or forty years, the former, on the average, have lost seven years, and the latter nine years of life. And, it would be difficult to find a physical power of endurance, and an average longevity, among men and women, in the ordinary occupations of life, as great as existed at the time of and before the revolution. This, it seems to us, might be fully proved, by examining and analyzing the pension list of Massachusetts, and other authentic sources of information.

[1] American Journal of Medical Sciences, Vol. I, for 1841, p. 382.

It is undoubtedly true, that in many things society has improved; that medical skill in the cure of disease has greatly increased; and that some diseases are not as fatal as formerly, or are now better understood and controlled. But while all this may be true, it is no less true that the active causes of disease have increased faster than the appliances for their prevention and cure; that new diseases, or old ones in a new and modified form, equally fatal and uncontrollable, have appeared; and that sickness and death advance more rapidly than the improvements devised to arrest them.

These statements, concerning the decreasing vital energies of man, are confirmed by recent investigations in England. Thos. Rowe Edmonds, Esq., Actuary to the Legal and General Life Assurance Society, in London,—a good authority in this matter,—has recently published some interesting papers, from which it appears "that the mortality of the population of England, after decreasing for 35 years to the year 1815, has since that time, up to the end of 1848, been regularly increasing; that nearly the whole of this increase arises from the increase of the mortality of children under 10 years of age, which increase has amounted to 44 per cent. in twenty years; that the mortality of every age above 20 years has remained the same, with little or no variation, for the last 30 or 40 years, and probably for a longer period; that in the greatest part of the population of England, with the exception of the population of larger towns, the mortality of females exceeds that of males in the interval of age comprehended between 8 and 45 years; and that at other intervals of age it is in excess over that of females in England as in other countries."[1] And he confirms the statement by the following tabular comparison of the mortality in England in 1813–1830, with 1838–1844; and in Carlisle in 1779–1787:—

[1] London Lancet, Vol. I, for 1850, pp. 301, 329. Mr. Edmonds had previously contributed some valuable papers on vital statistics to the Lancet. See Dec. 5 and 12, 1835, pp. 364, 408; Oct. 28, 1837, p. 154; Vol. II, for 1838–9, pp. 185, 353, 778, 837. He also published, in 1832, a new theory in regard to Life Tables.

Ages.	England—18 years. 1813—1830.		England—7 years. 1838—1844.		Carlisle—9 years. 1779—1787.
	Males.	Females.	Males.	Females.	Both sexes.
Under 5, -	4.90	4.22	7.07	6.04	8.23
5 to 10, -	.66	.61	.93	.90	1.02
10 to 15, -	.46	.48	.50	.55	.54
15 to 20, -	.66	.70	.70	.79	.64
20 to 30, -	.93	.95	.94	.94	.75
30 to 40, -	1.05	1.14	1.09	1.13	1.06
40 to 50, -	1.37	1.37	1.45	1.32	1.43
50 to 60, -	2.14	1.98	2.26	1.98	1.83
60 to 70, -	4.15	3.78	4.28	3.79	4.12
70 to 80, -	9.28	8.88	9.22	8.42	8.30
80 to 90, -	20.82	19.67	20.11	18.32	17.56
Over 90, -	33.93	34.09	36.53	34.58	28.44
All ages, -	1.99	1.90	2.27	2.10	2.50

An exception to these statements, in their general application, may be found in Geneva, which has often been quoted to show the improving condition of human life. Great improvements have undoubtedly taken place in that city; and they arise from the excellent system of registration and the superior sanitary regulations that exist there, by which the people are made better acquainted with the laws of health and the means of preventing disease. But the improvements are not so great as they may at first sight appear to be. The proof rests upon a comparison of the average age at death, which, as we shall presently show, is an uncertain test. Mr. Mallet, from whom the statement was originally derived, gives some facts in the same paper which partially account for the great apparent improvement. He says marriage there is now deferred to a later period of life than it was in the 18th century; that each marriage then, on the average, produced five children, and now less than three; and that, during the 16th century, 25.92 in each 100 deaths were those of children under one year old; while in the period he describes, 1814–1833, only 13.85 died of that age! This shows that there were less children *to die*, and consequently the average ages of *all that died* would be greater. It shows, however, a higher state of civilization, and that a greater proportion of the children born were preserved to the ages of maturity and usefulness.[1]

[1] Annales d' Hygiène publique, tom. XVII, p. 114.

III. PLAN FOR A SANITARY SURVEY OF THE STATE.

We now proceed to give an outline of a plan for the Sanitary Survey of the State which we propose for adoption. In drawing it up we have carefully inquired into the circumstances of many cities and towns in the State, and the sanitary condition of the inhabitants; and have, with no inconsiderable labor, matured a series of measures, which seem to us best adapted, under all the circumstances, as the plan which would be most likely to be practical and useful. In the progress of the inquiry, we have examined many printed works on the subject, and have availed ourselves of the information elicited in correspondence with gentlemen in Europe and in this country, whose knowledge, experience and judgment in these matters are entitled to the highest regard.

In a valuable communication, presented in the appendix, received from the councillors of the Massachusetts Medical Society, a preference is given to the plan of appointing a single individual to make the survey, after the manner of the agricultural, zoölogical, and other scientific surveys, which have heretofore been made by the State. Objections are, however, urged with considerable force against this plan. It is said that to intrust so great and important a work to one mind, however well qualified, would be less likely to receive public confidence and approbation, and hence would be less useful, than if it were the joint production of several minds, or received their joint approval; that if made with the facts at present accessible, although it would afford much valuable information, it might lead to erroneous conclusions; and that it would be merely transient, and not of permanent usefulness.

The English sanitary surveys have generally been the results of the joint labors of several individuals; and nearly all of them, of authority and usefulness, have been based principally upon the facts furnished by the efficient system of registration of births, marriages, and deaths, in operation there. Those which have departed from these facts, or have made a partial selection from them, are more or less mixed up with error.

Health is a variable matter, capable of improvement or deterioration. It may be good in one year, and not in another, and not alike in two places at the same time. No plan can therefore be extensively useful, or permanently valuable, which shall be confined to a single year or a single survey. It should extend over a series of years, and through a series of successive observations and examinations. In this way only can the laws of health and life of any place be accurately ascertained, and a sanitary survey produce all the good that might be attained by it. People are prone to neglect their own and the public health, and this fact is a reason why the subject should be frequently brought to their notice.

Our plan consists of a series of measures, which may be rendered permanent if desired, presented in the form of separate recommendations. They are divided into two classes, and are to be regulated and controlled by the agencies which are proposed to be established; one by the legislative authority of the State, and the municipal authorities of towns and cities, and the other by social organization and personal action. Though intimately connected, these measures are in some respects independent of each other. They are not of equal importance, and it is not expected they will all be immediately made use of; a part only may be adopted at one time, and another part at another time, as circumstances may require. They are here presented together, as necessary to give fullness and unity of design to the whole plan. It is not supposed, however, that they are all the useful sanitary measures which a complete and perfect plan would require. The progress of this inquiry, and the circumstances which it develops in different years,—the discoveries which will be made by the united intellectual efforts that will be brought to bear upon this subject,—will suggest others. Some of these measures are of great magnitude, and would each furnish matter for a volume, if fully explained and illustrated. All we propose to do in this connection is, to name and define each, and to give a brief explanation and illustration of its character and design. These measures, it must be recollected, however, are only a series of plans by which a sanitary survey might be carried forward.

The accompanying information is inserted merely to illustrate these plans.

I. STATE AND MUNICIPAL MEASURES RECOMMENDED.

Under this class of recommendations are to be included such measures as require, for their sanction, regulation and control, the legislative authority of the State, or the municipal authority of cities and towns. They may be called the legal measures,—the *Sanitary Police* of the State, (p. 16.)

I. We recommend *that the laws of the State relating to Public Health be thoroughly revised, and that a new and improved act be passed in their stead.*

We suppose that it will be generally conceded that no plan for a sanitary survey of the State, however good or desirable, can be carried into operation, unless established by law. The legislative authority is necessary, to give it efficiency and usefulness. The efforts, both of associations and individuals, have failed in these matters. We have shown that the present health laws of the State are exceedingly imperfect, even for the general object for which they were designed;—that it is difficult, and perhaps impracticable, to ascertain what precise powers they confer, and what duties they require;—and that they are not adapted, in any way, to the purposes of a sanitary survey. This must be apparent to any one who may examine them.

There are two remedies for these defects: one to amend the existing laws; and the other, to combine such amendments as it would be desirable to make with such provisions of the existing laws as it would be desirable to retain, and to present the whole together, in this amended form, as a complete health act, repealing such acts as are inconsistent with its provisions. We prefer the latter remedy. It will be better understood, and more easily carried into practice, by the people. Such legislation has been common, in this State and elsewhere, in relation to this and other matters.

Entertaining these views, we suggest that a general health law should be passed, which should be comprehensive in its design and simple in its provisions,—be adapted to the present circum-

stances of the State, and be so framed that it might be clearly understood and carried into practical operation; and which, while it would answer all the purposes of a general health act, as heretofore understood, would, at the same time, accomplish all the purposes of a sanitary survey.

We have accordingly drawn up, and present in the appendix, a draft of such an act as, in our judgment, it would be expedient to pass, to secure the advantages designed to be attained. It creates a permanent agency, for the regulation and control of all matters relating to the sanitary condition of the State and its inhabitants. It retains such provisions of the existing laws as are deemed worthy of being retained, and incorporates such others as are deemed necessary to form a complete legal sanitary system. It confers no summary powers not now possessed by Boards of Health, but it limits more closely, and defines more clearly, the duties of those by whom these powers are to be exercised. The objects of all the sections of the Revised Statutes now in force are provided for. The first four sections are contained in a more extended form, and provided for by other agencies, in the first 15 sections of the new act; 18 sections,—5, 6, 7, 15, 17, 18, 35 to 42 inclusive, 45, 47, and 48,—in section 16th; 8 sections,—24 to 34 inclusive,—in the 17th; 2 sections,—43 and 44,—in the 18th; 4 sections,—24, 49, 13, and 12,—are inserted with but little modification; 5 sections of the act of 1849, which take the place of 10 and 11 of the Revised Statutes, are inserted, so modified as to apply to towns as well as cities. With these provisions, various other new and important ones are incorporated; and the whole is so arranged as to form a simple but systematic, efficient, and practical plan, adapted to the present condition and wants of the State. The whole act, long as it seems to be, is not so long as the act relating to public health in the Revised Statutes. That contains 49 sections, and this 39 only.[1]

[1] The "Act relating to Public Health in the City of New York," passed by the Legislature, April 10, 1850, covers 48 octavo pages, and contains 89 sections and 31 sub-sections; the acts relating to the Board of Health in Philadelphia cover 111 pages; that relating to the public health in England fills a duodecimo volume of 330 pages; that of Liverpool, contains 231 sections, and several sub-sections; that of Edinburgh, 260 sections, or 101 closely printed octavo pages.

II. We recommend *that a* GENERAL BOARD OF HEALTH *be established, which shall be charged with the general execution of the laws of the State, relating to the enumeration, the vital statistics, and the public health of the inhabitants.*

The act establishing the Board of Education was one of the most important acts relating to common schools, ever passed in Massachusetts. That central agency, under the guidance of its late talented secretary, has given to the cause of public education an importance, and to the common schools a standard of elevation and usefulness, not before attained. The cause of Public Health needs a similar central agency, to give to the whole sanitary movement a uniform, wise, efficient, economical and useful direction. If different local authorities, or individuals,—not always possessed of the best means of information,—are left to originate plans for their own guidance, and anything is done, they will be more likely to make unintentional mistakes, and create unnecessary expense, than if wise and able minds were devoted to the subject, and suggested what ought to be done, and the best and most economical mode of doing it. Such an agency would have an exact knowledge of the condition of every city and town in the State, and by these means of information would be able to suggest the measures best adapted to the different circumstances. They would prevent a wasteful expenditure of money in imperfect or inefficient measures. The advantages which would result to the whole State, and to every part of it,—to each and all of the inhabitants,—from the establishment of such a central General Board of Health, composed of the best scientific counsel and the best practical experience which the State can afford, having constant access to the most enlightened intellects, and to a knowledge of the labors of the best practical men in the world, and assisted by at least one mind wholly devoted to the object in view,—are too great to be fully seen at once, and can scarcely be over-stated or over-estimated.

The duties of the Board are pointed out in the fourth section of the act. They are to have the general direction of each census; to superintend the execution of the sanitary laws of the State; to examine and decide upon sanitary questions, sub-

mitted to them by public authorities; to advise the State as to the sanitary arrangements of public buildings and public institutions; to give instructions to local Boards of Health, as to their powers and duties; to suggest local sanitary rules and regulations; to recommend such measures as they may deem expedient, for the prevention of diseases and the promotion of the public health; and to report their proceedings annually to the State.

III. We recommend *that the Board, as far as practicable, be composed of two physicians, one counsellor at law, one chemist or natural philosopher, one civil engineer, and two persons of other professions or occupations; all properly qualified for the office by their talents, their education, their experience, and their wisdom.*

The constitution and powers of the Board are prescribed in the first seven sections of the act proposed for its establishment and organization. It is intended that it shall be composed of seven persons, besides the governor and secretary of the Board of Education for the time being. And that the disadvantages of too frequent changes may be avoided, that successive Boards may know the proceedings of their predecessors, and that the outgoings and incomings of new members may not destroy its system and vitality, it is provided that the members shall be appointed for seven years, and go out of office alternately.

The members should not be selected exclusively from one profession, for two reasons:—1. Numerous questions, requiring a knowledge possessed by different professions, will be presented for discussion and decision; and it is desirable that the Board should be able to bring competent knowledge to the investigation of every subject. And 2. To show to all that the promotion of public health is a matter which does not belong exclusively to the medical profession, but concerns every profession and every person. The idea which too generally prevails, that every thing relating to health belongs exclusively to one profession, operates against sanitary improvement. The services of medical men are indispensable; but the services of other professions, and of every person in their respective spheres,

must be put in requisition, before reform can be complete. The Board should therefore contain—

1. Two physicians, at least, of scientific attainments, and of extensive practical experience in their profession, thoroughly understanding sanitary science, and deeply feeling the importance of wise sanitary measures.

2. One counsellor at law, who, besides the general knowledge of law and medical jurisprudence which he could bring to the purposes of the Board, might especially be able to investigate any legal question that might arise.

3. One chemist, or natural philosopher. Many questions relating to the influence of the elements on the production or prevention of disease, may require the special investigation of an experienced chemical philosopher, and this important branch of science should be ably represented at the Board.

4. One civil engineer, possessing competent knowledge to determine the best methods of planning and constructing public works, and the best architectural sanitary arrangements of public buildings, workshops, and private dwelling-houses, would be an exceedingly valuable member.

5. Two other persons, of acknowledged intelligence, good judgment, and of practical experience in the common business affairs of life, and capable of investigating and fully understanding the principles of sanitary science, might compose the remainder.

All should make themselves thorough masters of the objects of their appointment; have sagacity and foresight to perceive the bearing and effect of every measure proposed; be eminently practical men, wise in deliberation, and judicious in decision. The objects of the Board will be of the greatest importance and interest; and it should, and undoubtedly will, command, not for its pecuniary emoluments, but for its high respectability, honor, and usefulness, the greatest talent in the Commonwealth, and the services of those who, in an eminent degree, possess the public confidence.[1]

[1] Dr. Duchatelet, an eminent member of the Council of Health of Paris, in describing the qualifications of officers of Public Health, says:—"It is generally thought in the world that the medical knowledge acquired in the schools is all that is necessary to become a useful member of the Council of Health. The greater part of medical men themselves share this

IV. We recommend *that the Board be authorized to appoint some suitable and competent person to be the Secretary of the Board, who should be required to devote his whole time and energies to the discharge of the duties of his office, and be paid a proper salary for his services.*

The duties of the Secretary are defined in the eighth section of the proposed act. Besides keeping the records and accounts of the Board, he is to superintend the taking, and prepare the abstracts of each State census; to perform the duties relating to the registration of births, marriages, and deaths, now performed by the Secretary of State; to make special sanitary surveys of places, when directed; to report annually an abstract of the information obtained; to perform such other duties as may be legally imposed upon him; and to diffuse "throughout the Commonwealth information relating to the sanitary condition

opinion; and, on the strength of some precepts which they have collected from books on health and professions, they think themselves sufficiently instructed to decide on the instant the gravest questions, which can only be resolved by special studies. A man may have exhausted medical literature; he may be an excellent practitioner at the sick-bed, a learned physician, a clever and eloquent professor; but all these acquirements, taken in themselves, are nearly useless in a Council like that of Paris. To be really useful in the Council, it is necessary to have an extended knowledge of natural philosophy; to know with exactness the action which trades may have on the health of those who exercise them, and the much more important action of manufactories of every species on men congregated in towns, on animals, and on plants. This knowledge, so important, of the action of manufactories and trades, is not to be acquired by ordinary study, or in the science of the cabinet. It is not to be obtained without positive notions on the arts, and on the greater part of the processes peculiar to each trade. It requires habit, and the frequenting of the places of work. In this particular, more even than with medicine, books are not a substitute for practice. From what has been said, the necessity will be evident to introduce into the Council those physicians who have made health, and particularly the public health, a special study; and to join with them chemists, and, above all, manufacturing chemists, and other professions."—*Chadwick's Sanitary Report*, p. 423.

The Edinburgh Review for Jan., 1850, (p. 221,) in an article on Sanitary Reform, holds the following language in relation to the Board of Health in England:—"We believe that some not unnatural jealousy has been felt by the medical profession, as to the constitution of the Board; but we cannot regret the circumstance that its chief operative leader is not a physician. It is very necessary that such a department should have the best scientific counsel and assistance that the country can afford, and the debt which it owes to the recent services of Dr. Southwood Smith, Dr. Sutherland, and other physicians, cannot well be overrated; but, on the other hand, it seems indispensable that an administrative body, coming in contact with constitutional rights and responsibilities, should have another kind of leadership. To balance the heroism and disinterestedness, for which we most willingly give them credit, the medical body have some defects, especially in their jealousies and prejudices. It is difficult to get them to countenance any thing inconsistent with what they have long seen and practised; and they would certainly not be so ready as laymen to give way to the collective wisdom of their own brethren. We firmly believe, in short, that the first physicians in the country will more frankly communicate to such a board as the present, their individual convictions, than to any convocation of their professional brethren; and that the board will more candidly weigh and more cheerfully adopt their views. The value of unprofessional superintendence,—the same class of persons who are to execute arrangements never being entirely the same as those who devise them,—has been evinced in the management of the Admiralty. It has been appositely remarked, that Nelson never would have obtained high command from a board of old admirals. Nor is it uninstructive to remember that, though they have liberally responded to it, the idea of sanitary reform, on the scale which we are now considering, did not *originate* within the medical profession. And, in truth, the constant direction of the faculties to the cure of actual disease, does not seem likely to leave much observation to devote to the study of its external causes."

of the State and its inhabitants, to the end that the laws of health and life may be better understood, the cause of disease ascertained and removed, the length of human life extended, the vital force and productive power increased, and the greatest amount of physical improvement and of happiness attained and enjoyed."

He should be amply qualified, in all respects, for the office; know what to do, and how to do it, and what information to obtain, and how to obtain it. He should be thoroughly educated in the science of public health, and the causes and prevention of disease; and be capable of arranging, analyzing, abstracting, combining, and publishing the facts that may be collected, with proper deductions and conclusions from them, in such form as will be most useful to science, and contribute most to the improvement of practical life. To discharge the duties of such an office in such a manner as they might and ought to be discharged, would, in our judgment, be enough to satisfy the desires of any man who wished to be honored and useful.

V. We recommend *that a* LOCAL BOARD OF HEALTH *be appointed in every city and town, who shall be charged with the particular execution of the laws of the State, and the municipal ordinances and regulations, relating to public health, within their respective jurisdictions.*

The constitution, and the powers and duties of these Boards, are defined and prescribed in the proposed act. They are each to be composed of not less than three nor more than seven persons, besides the mayor and city registrar of cities, (or the city clerk, where there is no city registrar,) and the chairman of the selectmen, and the town clerk, of towns; and are to be appointed for the same number of years as there are members constituting the Board; and to go out of office alternately, like the General Board of Health, and for the reasons already given. Any one, however, being duly qualified, may be reappointed. These Boards should be filled by men of similar character to the General Board, and without reference to any peculiar political or religious opinions they may entertain. One or more physicians, educated in sanitary science, should be members of each

Board. Persons of sound judgment and good education, of other professions or occupations, and qualified and fitted for these peculiar duties, might supply the remainder. All should have the public respect and confidence. It is intended that they shall be appointed by the mayor and aldermen of cities, and the selectmen of towns, because this mode would be more likely to secure a better Board, than a nomination and election in general town meeting.

The duties of these Boards are pointed out in the act, and particularly in the sixteenth section; and also in the several recommendations in this report. They will be required, generally, to carry into execution, within their own town, the sanitary laws of the State, and the orders of the General Board of Health; and, as far as possible, to prevent disease, and raise the standard of public health to the highest point.

We have referred (pp. 48–54) to the sanitary laws and customs of this State; and we deem it proper again to refer to the subject, that we may compare them with the measures proposed in this recommendation. The Revised Statutes (p. 208) provide that—

"Every town, respecting which no provision is made, by any special law, for choosing a Board of Health, may, at their annual meeting, or at any other meeting legally warned for the purpose, choose a Board of Health, to consist of not less than three, nor more than nine persons; or they may choose one person to be a health officer; and, in case they shall not choose any Board of Health, or health officer, the selectmen shall be the Board of Health."

Each of the charters incorporating the nine cities in this State, contain a provision similar to the following:—

"All the power and authority now by law vested in the Board of Health for the town of ——, or in the selectmen of said town, shall be transferred to and vested in the city council, to be carried into execution by the appointment of Health Commissioners, or in such other manner as the city council shall deem expedient."

And the act of May 2, 1849, provides that—

"1. All the powers vested in, and the duties prescribed to,

Boards of Health of towns, by the general laws, shall be vested in, and prescribed to, city councils of cities, in case no special provision to the contrary is made in such laws themselves, or in the special laws applicable to any particular city.

"2. The powers and duties above named may be exercised and carried into effect by city councils, in any manner which they may prescribe, or through the agency of any persons to whom they may delegate the same, notwithstanding a personal exercise of the same, collectively or individually, is prescribed in the instance of towns, as above referred to. And city councils are hereby authorized to constitute either branch, or any committee of their number, whether joint or separate, the Board of Health for all, or for particular purposes, within their own cities."

In addition to these general provisions of law, some special Boards of Health, as we have already shown, have been incorporated. Under their operation, it is left optional with each city and town to make or not to make ordinances and regulations on the subject of public health. The practice of different cities and towns, in exercising their powers, has been various.

In Boston, the mayor and aldermen are constituted Health Commissioners, and they appoint, annually, a Committee on Internal Health, on External Health, on Streets, on Drains and Sewers, on Water, and on Burial Grounds; each consisting of three members, who examine into all complaints and matters affecting the public health in their respective departments. The city council choose, annually, the following officers:—

1. A *Superintendent of Streets*, to have the general care of sweeping and cleansing the streets, lanes, alleys, public walks, squares, &c., of the city.

2. A *Superintendent of Common Drains and Sewers*, to superintend the location and construction of these important aids to comfort and health.

3. A *Water Board*, to superintend the distribution of the inestimable blessing to health, which is now furnished in all desirable quantities by the Boston Water Works.

4. A *City Physician*, "to examine into all nuisances, sources

of filth, and causes of sickness, which may be on board of any vessel at any wharf within the harbor of Boston, or in any article which may have been landed from any vessel on any wharf or other place, and, under direction of the mayor and aldermen, to cause the same to be removed and destroyed;"— "to vaccinate all persons who may apply to his office for the purpose, and to give certificates of vaccination, without charge;" —"to attend upon all cases of disease in the jail," and "within the city, whenever he shall be called upon by the Health Commissioners, or overseers of the poor."

5. A *Port Physician*, to be the physician of the city establishments at Deer Island, and to superintend the quarantine of all vessels and passengers which arrive in the harbor of Boston.

6. Five *Consulting Physicians*, "in case of an alarm of any contagious, infectious, or other dangerous disease, occurring in the city or neighborhood, to give the mayor, or either branch of the city council, all such professional advice and information as they may request, with a view to the prevention of the said disease, and at all convenient times to aid and assist with their counsel and advice in all matters that relate to the preservation of the health of the inhabitants."

7. A *City Registrar*, to record births, marriages, and deaths, and to superintend the interment of the dead.

8. A *City Marshal*, to act as health officer; "from time to time to pass through the streets, alleys, and courts of the city, to observe nuisances, to receive complaints from the inhabitants," &c.

Each of these departments is independent of the others. The superintendent of streets collects the street dirt and house dirt, deposits it in an outer limit of the city, and sells it as wanted. He also collects the house offal, and delivers it at a given place within the city, to contractors, who remove it without the city, and who paid $8,000 for it in 1849. The night soil is removed under the direction of the city marshal; the householders paying $3.00 per load for its removal in summer, and $1.50 in winter.

The annual net expenses of all the health departments have been as follows, for the years ending May 1 :—

For	In 1847.	In 1848.	In 1849.	In 1850.
Sewerage and Drainage,	$16,705 68	$18,532 14	$25,872 56	$37,268 11
Internal Health,	53,014 44	67,273 04	68,792 16	88,441 71
External Health,	805 84	1,339 33	1,121 95	3,531 51
Total,	$70,525 96	$87,144 51	$95,786 67	$129,241 33

The extra expense of $28,245 87 for the Cholera Hospital, and other precautionary measures on account of the cholera, in 1849, are included in the amount under 1850.

In Salem, Roxbury, Charlestown, and most of the cities, the superintendence of all matters relating to the public health is placed under the city marshals, as health officers, subject to the control of the mayors and aldermen. No Boards of Health or health committees are appointed, and no separate accounts are kept of the expenses incurred.

The towns of Marblehead and Plymouth have Boards of Health under their special acts, though often inactive. Springfield, Danvers, and some other towns, have had health committees for several years. Danvers has published some valuable reports of their committees. But, as far as our knowledge extends, few towns have chosen Boards of Health, or health committees, nor have the selectmen often acted in that capacity. With the exception of a few cities and towns, nothing whatever has been done on the subject. Much good has resulted in Boston and some other places, from their health regulations, but not so much as might and ought to have been effected. The whole plan, where any plan exists, for the sanitary police of the State, is essentially defective. The sanitary laws are inefficient and inoperative. They *allow* something, but *require* little or nothing to be done, and consequently little or nothing is done. Health, if attended to at all, is considered merely a secondary, incidental matter, and not, as it should be, a leading, essential matter. In some towns, when Boards of Health or health committees have been chosen, it has been done in open town meeting, by nominations at large, like fence-viewers, or other unimportant town officers. Such a practice is not likely to

secure competent men. And in places where more consideration is given, persons holding office for one year only are often appointed, who, though worthy in other respects, cannot, from their education and position, be supposed to be qualified to act intelligently on these great matters.

Even in Boston, where so much has been done, and well done, far more might be accomplished, at the same expense, by the plan which we propose, than by the existing regulations. This it would be easy to show, if space were allowed for discussion and illustration.

A permanent Board of Health, having the general superintendence of all sanitary matters, constituted as it might and should be, would supersede the consulting physicians, relieve the over-burdened aldermen of some of their onerous labors, and manage every department with more uniformity, wisdom, economy, and efficiency. The city registrar and mayor would be ex officio members of the Board. Through the former they would have access to the records of every death which takes place, and thus be made acquainted, at all times, with the prevailing diseases, and the public health; and through the latter a constant intercourse might be kept up between the Board and the city government. The annual reports, which such a Board would be required to make, might be made of far more interest and usefulness than any now distributed. They would be annual sanitary surveys of the city, affording suggestions of the highest importance to the welfare and improvement of the citizens.

And what might be done on a large scale in Boston, might be done on a smaller one in all the towns in the State.

VI. We recommend *that each local Board of Health appoint a Secretary; and also, if occasion require, a Surveyor and Health Officer.*

The 12th section of the proposed act provides for the appointment, and the 13th, 14th and 15th sections prescribe the duties, of the officers of Boards of Health. Every Board should have a secretary, to keep its records, books and papers, and perform such duties as usually pertain to such an office. A surveyor or engineer would also be useful, especially in cities

and populous villages, to examine into all questions which may require the investigation of such an officer, as prescribed by the act, or for the office of engineer of the General Board, page 113. In many of the small country towns this officer might be dispensed with, though in all he would be useful. Each Board should have an Officer of Health, who should, where practicable, be an intelligent physician, well educated, and especially acquainted with sanitary science, having no peculiar theory to build up or support, as regards different modes of practice for the cure of disease, but conscientiously desirous of doing all within his power to *prevent* disease, and to raise the standard of health within his jurisdiction, by carrying into execution all proper local regulations, and those of the general Board of Health. Some towns may not be able to select such an one, and in such cases, persons of other professions or occupations may be substituted. All officers of local Boards of Health should possess, in as great degree as possible, the qualifications already stated as proper to be possessed by the members and officers of the general Board of Health. (Page 113.) From an examination of the sections of the proposed act to which we have referred, and of the various recommendations and suggestions of this report, officers of local Boards of Health will be able to learn their duties, without a recapitulation in this place.

The 3d and 4th sections of the health laws in the Revised Statutes, authorize Boards of Health to "appoint a physician to the board," and to "establish the salary or other compensation of such physician, and shall regulate all fees and charges of every person, appointed by them in the execution of the health laws and of their own regulations." This is a power greater than is proposed to be conferred by the new act.

VII. We recommend *that local Boards of Health endeavor to ascertain, with as much exactness as possible, the circumstances of the cities and towns, and of the inhabitants under their jurisdictions; and that they issue such local sanitary orders and make such regulations as are best adapted to these circumstances.*

The sixteenth section of the proposed act, authorises local Boards of Health to issue orders and make rules and regulations for nineteen purposes. This authority, however, is to be exer-

cised only in certain contingencies, of which they are to be judges. If, in their opinion, the public health suffers; or if it would be promoted by making such regulations, in regard to either particular, they are bound to make them; if otherwise, they may omit doing it. No regulations inconsistent with the constitution and laws of the State, however, can in any case be made. Any regulation may be modified or annulled, as circumstances may require. Discretion and wisdom, in this as in other matters, will be required in carrying this provision into effect. The powers conferred are not greater than those now possessed under the Revised Statutes, nor in some respects are they so great and summary. The proposed act limits, defines, and restrains existing powers, though it allows them to be extended to some other matters not now specially provided for, which seem to us properly to come under the cognizance of local Boards of Health.

In the appendix, we have given several regulations for local Boards of Health, extracted from many existing codes in our possession; and from them may be formed and arranged, by modification, alteration, abridgement, and extension, a system adapted to different localities.

VIII. We recommend *that local Boards of Health endeavor to carry into effect all their orders and regulations in a conciliatory manner; and that they resort to compulsory process only when the public good requires it.*

In carrying any public measure into effect the favorable opinion and coöperation of the people is desirable. It can thus be accomplished more easily and more thoroughly. Boards of Health should diffuse information concerning their regulations, and the measures they propose for execution; and public opinion should be educated and properly influenced in their favor. It would be unwise, in most cases, to enforce any regulation or measure against the general and deliberate wishes of the inhabitants, after such a regulation has been fully and fairly laid before them and comprehended. It sometimes happens, however, that opinions are given from interested motives, or from local or party prejudices, which are not the deliberate, unbiassed sentiments of the people generally. Such opinions

should not be received as guides of public action. Caution and careful examination should be used before executing any measure not generally sanctioned.

Under the operation of sections 19 to 24, of the 21st chapter of the Revised Statutes, the sheriff can, if he chooses, with or without the consent of those interested, appropriate any person's house and any one's provisions and personal services, for the use of the sick. This summary power has existed in this Commonwealth for nearly two hundred years; but, notwithstanding its antiquity, it is deemed proper to modify it in some degree, as in the 21st section of the proposed act. Cases may occur, however, where, in a house or a locality, a nuisance or a disease may exist, which is directly injurious to the health of the neighborhood, and which the owner or occupant, even after persuasion and remonstrance, refuses to remove or abate. In such cases it becomes the *duty* of the Board of Health to interfere. Public safety requires it—human life demands it. And for such cases the authority of this section is very properly given.

IX. We recommend *that an appropriation be made annually by the State, for the purchase of books for the use of the general Board of Health; and by each city and town for the purchase of books for the use of each local Board of Health.*

We have said that a knowledge of what ought to be done, and of the best way of doing it, is an important requisite in the discharge of any duty; and in none is it more important than in matters relating to health. The principles on which the science of public health is founded, the different modes by which those principles have been applied, and the practical experience of those by whom they have been carried forward, are from time to time published, and are accessible to the public. And as a means of enlightened action and judicious economy, an appropriation should be made by the State, and by each city and town, of such a sum as circumstances may render expedient, for the purchase of the most useful and important of these publications for the use of the several Boards of Health. They would aid in the adoption, application and administration of different measures, in different localities; and thus enable us

to avoid the useless and expensive mistakes made by others, and to which we may be liable. The expediency of this measure is too obvious to need discussion. The Board of Health of Philadelphia is the only one in this country, to our knowledge, which has commenced the formation of a Sanitary library. Their excellent example is worthy of imitation by others. Section eleven of the act provides for this matter. In the appendix we have given a list of several works that have come under our own immediate examination, and which we have found to be valuable for such an object.

X. We recommend *that each local Board of Health be required to make a written report annually to the town, concerning its sanitary condition during the next preceding year; and to transmit a written or printed copy of the same to the General Board of Health.*

The cause of education is not of greater importance than the cause of public health; and what has been done for the former may very properly be done for the latter. It is now twenty years since one of this Commission, being then a member of the school committee of the town of Concord, prepared and published a new code of school regulations for that town. Among other matters it was provided that bound blank books for school registers for each school district, prepared under such form as he prescribed, should be furnished by the general school committee to the several teachers at the commencement, and returned at the end of the successive school terms; and that the committee should make written reports to the town at the annual meeting, concerning the schools, under their superintendence, during the next preceding year. The first written report was prepared, presented, and published by him in 1831. This regulation *was original with him;* and as far as his knowledge extends, *this was the first annual school report of that description ever presented in a public town meeting in Massachusetts.* Subsequently this regulation was introduced into Cambridge, Northborough and other places; and it operated so well that, at his suggestion, while a member of the legislature, the law of April 13th, 1838, relating to this subject, was matured and passed. And it may with perfect truth be said that no one

measure, aside from the establishment of the Board of Education, has done so much good.

What has done so much for education may do as much for public health. The annual school reports have made education a subject of abiding interest among the people, prevented ignorance and saved the intellectual character of the State. The sanitary reports would bring matters of no less importance before the people of every town; make public and personal health a subject of no less abiding interest; and thus tend to prevent disease and physical suffering, and save life. They would be annual lessons on sanitary science, localized and reduced to practice in the known experience or observation of the citizens.

The materials for the composition of these reports will of course vary in different places and in different years. Concerning large towns and epidemic seasons, more may, with propriety, be said than concerning small towns and healthy seasons. But to the Boards of Health of every town, in every year, a sufficient number of topics will be suggested for a report, which might be so drawn as to be made interesting and valuable. The births, marriages and deaths; the different diseases and causes of the deaths, and the external circumstances under which they occurred; the amount and kind of sickness suffered among different occupations, and in the public schools; a description of localities where diseases have been most prevalent; facts which develop the causes of disease; means suggested for their prevention; and the various subjects mentioned in this report, and especially in the circular in the appendix, relating to a sanitary survey, or developed in the practical discharge of duties, will furnish to Boards of Health ample materials and facts for discussion. We have inserted in the appendix reports which might have been made in two towns for the last year, to illustrate our ideas of what such reports might contain.

A copy of the reports from every town in the State is to be transmitted to the General Board of Health to furnish materials for their annual reports. In this way a sanitary survey of the State would be made and published every year, imparting information of the utmost importance.

XI. We recommend *that the sanitary and other reports and statements of the affairs of cities and towns which may be printed should be in octavo form, on paper and page of uniform size, (similar to the public documents of the State,) and designed to be bound together, as* the Annual Reports of the Town; *and that five copies be preserved by the Board of Health, one copy be furnished to the General Board of Health, one to the State Library, and that others be given to Boards of Health elsewhere in exchange for their publications.*

The system of exchanges of public documents and works, was introduced into this State, by a member of this commission, by a resolution which passed the Legislature, April 23, 1838. This was some years before Mr. Vattemare was known in this country as its promoter. Though much less has been accomplished in carrying out the provisions of that resolve, than might have been done, yet considerable benefit has already resulted from the measure. A uniform collection of all the printed documents of a city or town, bound and preserved; and in addition a collection of similar works of other towns and public bodies, would constitute an exceedingly valuable fund of the recorded experience of the age; and could not fail of being of great use to all interested. We have accordingly provided for it in section eleven.

The city of Baltimore requires reports from all the departments of the government and city institutions, to be made annually in January; and these reports are published together, in a volume, forming an exceedingly valuable depository of official papers, showing the history and progress of the city. A similar practice, embracing a part only of the city institutions, prevails in Salem, Lowell, Cambridge, and in some other places, in our own State. It should be generally adopted by all municipal corporations, any of whose documents are printed.

XII. We recommend *that the successive enumerations of the inhabitants of the State be so made, abstracted, and published, that the most useful and desirable information concerning the population may be ascertained.*

Several important purposes are attained in an accurate enumeration or census of the inhabitants. The constitution of the

United States and of this State both require such enumerations to be made, as the basis on which the number of representatives to the national and state legislatures shall be determined. This is a *political* purpose. The character of man, as a social being, is modified by the circumstances of his existence, and varies as these circumstances vary in their development in different places and at different periods; and it is desirable for a social and *scientific* purpose that such characteristics may be ascertained as will exhibit these varieties or differences. *An exact knowledge, too, of the living inhabitants in a given locality, is the first, and an essential element, for estimating their sanitary condition.* This is the third most important purpose.

It should be the main design of every census, taken for a scientific or sanitary purpose, to ascertain some positive facts, concerning the then existing persons enumerated, which may be compared with other similar facts, as a common standard, or together, to show the characteristics of different populations. Two censuses, one containing a class of facts as to ages or other circumstances, and another, a different class, cannot be so compared together, and hence are nearly useless. The value of the six different enumerations of the inhabitants of the United States, would have been much greater than they are, if all of them, both of the free and slave population, had been made and abstracted upon a well digested and the same uniform plan. As they are, they contain but a few classes of facts which admit of comparison with each other. It is well to consider, before taking a census, what facts or characteristics are most desirable and important; and, when determined upon, the same facts should be obtained in every subsequent census.

To fulfil all the political requirements of the constitution of the United States, and of this State, an enumeration of the whole number of the inhabitants, merely, without any particulars except a statement of the free and slave population separately, and "excluding Indians not taxed," is all that is required. But the scientific and sanitary inquirers are not satisfied with such an enumeration. They desire to know something more than the mere numbers of the people. They know that the social character and elevation, and the sanitary welfare

of the population, depend upon various other characteristics, not possessed by all populations alike, or in the same degree; and that these cannot be ascertained by the number alone.

What then are the characteristics of a population, which it is desirable and important should be known, and which admit of positive ascertainment? In our judgment, the following classes of facts are desirable in every census :[1]—

1. *Color and Freedom.* Three classes of persons exist in this country,—the whites, the colored, and the Indians; and of the colored there are two sub-classes—the free and the slave. The political rights, possessed by each of these classes, differ in different states; and it has been supposed that they are not all affected alike by the same sanitary influences. The numbers possessing each of these characteristics should therefore be ascertained both for political and sanitary purposes.

2. *Sex* is another characteristic universally acknowledged as important, and the numbers of each should be carefully obtained.

3. The *Ages* of the population are characteristics, interesting and important in many respects, and indispensably necessary in all sanitary inquiries. Without them a census is comparatively useless. They should be ascertained by the enumerator with as much exactness as possible; and afterwards so abstracted that uniform comparisons may be made between the populations of the same ages living in different places, at different periods, and under different circumstances; and with the dead.

4. The *Domestic Condition*, or the number of unmarried, married, and widowed, is an interesting characteristic, which

[1] The purposes of this report will not admit of so full an explanation and illustration of these several classes of facts, nor of the plan of obtaining them and of making the abstracts for publication, as may be necessary to make them clearly understood. Those who desire further information on the subject, are referred to a Report on the State Census of Massachusetts, (House document No. 127, for 1849); to the Instructions issued for taking the seventh census of the United States; to the Report on the Census and Statistics of Boston for 1845; to an article in the Journal of the Statistical Society of London, on the Best Mode of taking the Census of the United Kingdom for 1841, Vol. III, p. 72, for April, 1840; to the three volumes of Abstracts of that Census, published under the titles of the Enumeration Abstract, Occupation Abstract, and Age Abstract; to the admirable but voluminous Report of the Commissioners for taking the Census of Ireland for 1841; to the series of Reports of the Registrar General of births, deaths and marriages in England, and especially to the Appendices to the Ninth Annual Report, and to the "Recensement Général"—the General Census of Belgium for 1846,—a work admirably executed, under the Central Statistical Commission, of which M. Quetelet is President. These works contain the results of the more recent experience, and should be carefully studied by all who may have the superintendence of the census.

has been ascertained in the censuses made by nearly all the governments of Europe, and should be known for its important social and sanitary influence.

5. The *Occupations* of the people have an influence upon their character and health. The facts should be obtained, at least, in relation to all males over fifteen years of age, and engaged in the principal professions and occupations.

6. The *Place of Birth* should be known, so far as to specify separately those born in the town or city where they reside, (to show the sanitary influence of locality) those born in the different States of the United States, and those born without the United States.

7. *Education* has an influence upon the sanitary condition of the people; and some facts regarding it should be known concerning all persons over 20 years of age. An answer to the question, "Can you read and write?"—will afford a simple and definite fact, and may be obtained concerning every person.

8. *House Accommodation* is quite important. The number of persons to a family, and the number of families and persons to a house, and the extent of their accommodations, should be known. Life and health are often affected by over-crowded dwellings.

9. *Means of Subsistence* and *Comfort* also have an influence upon the sanitary condition of a people. A simple but definite, certain and important fact, as to this characteristic, might be determined by the number of "owners of real estate," (not "the value of real estate owned," which is indefinite and uncertain as applied to individual inquiry.) A comparison of the proportion of this number or class of persons with the whole population of different places and at different periods, would exhibit interesting results.

10. *Health.* Useful information concerning four special diseases,—blindness, deafness, insanity and idiocy,—has been ascertained in the last two censuses. The number of persons thus afflicted, as well as the number of paupers and criminals, should be known.

Two plans have been devised for obtaining the facts in a census.

1. By *abstract inquiry;* and by the use of a blank tabular form of a schedule, containing headings, under which are to be entered the different classes of facts, and in such form, as they are intended to appear in the final printed abstract. They are elicited by the inquiry,—How many are in this class, and in this, and so on, naming each class. It is obvious that even by this plan, *if accuracy is intended*, the characteristics of every person and of every elementary fact, so far as relates to all the particulars required by the schedule, must first be obtained separately; and afterwards, though, at the same time, they must be analyzed, abstracted and combined, and entered under the respective heads to which they belong. By this complication of the matter errors are likely to occur, and cannot easily be avoided. This plan may answer for guesses, or estimates, but affords no check against over-estimates or imperfections, nor is it any test of accuracy; and besides, such a plan admits of no other combination or abstract of the facts than the one pointed out in the schedule.

2. By *individual or elementary inquiry;* and by the use of a blank schedule, in which the name of every person enumerated is to be entered; and opposite the name, under separate headings, such facts, descriptive or characteristic of each, as are designed to be ascertained. These may be more or less extended at pleasure. By this plan, the single object of obtaining the elementary facts of the census, in the most simple, correct and positive manner, without complicating the labor at the time with any combination or abstract, is all that is attempted by the enumerator. The abstracts for publication are made in a different form by another agency. It is obvious that by this plan errors will be much less likely to occur, and may be more easily corrected at the time if they should happen, than by the plan of abstract inquiry. Taking the name of every person will be a guarantee that no more will be returned than actually exist. And the *same* facts may be *accurately* obtained, more easily, rapidly, and economically. And besides, the facts thus obtained may be abstracted and combined in very many different ways, to show a much greater variety of interesting and important results.

The first is the plan hitherto adopted in the censuses of the United States. The second, however, is now regarded by all correct statists, who have carefully examined the two plans, as very much the best, and as the only one which will ensure accuracy. It was first introduced into this country in the census of Boston, in 1845; and, since then, that example has been commended and followed by other cities. A modification of the plan, designed for general application, was prepared, at the special request of the Census Board at Washington, and has been adopted, though not without some deviations, for the seventh census of the United States, to be taken this year.[1]

The schedule recommended, relating to the free inhabitants, contained the following headings:—

Dwelling-houses, numbered in the order of visitation.	Families, numbered in the order of visitation.	Name of every person whose usual place of abode, on the first day of July, 1850, was in this family.	Description.			Domestic condition.		Profession, occupation, or trade, of each male person over fifteen years of age.	Owners of real estate.	Place of birth.		At school during last year.	Persons over twenty years of age who cannot read and write.	Whether deaf and dumb, blind, insane, idiotic, a pauper, or a convict.
			Age.	Sex.	Color. White, black, or mulatto.	Married.	Widowed.			Born in the town, where each resides.	In what other states, territories or countries born.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

These schedules are designed to contain complete *Registers of the Population.* Three sets, or copies, are to be made; one of which is to be deposited in the office of the court of the county, and one in the office of the secretary of the state, to which they relate; and the other is to be forwarded to the Secretary of the Interior, at Washington. Under his superintendence, or that of some person whom he shall appoint, these

[1] The design of the schedule should be to obtain some positive, existing, known characteristics of the population, at the time of the enumeration. Whether "married within the year" is a historical inquiry, and the "*value* of real estate owned" a collateral one, which destroys the unity of the design.

schedules are to be arranged. They are not to be published, nor are they to be considered as models for publication; but they are to serve the simple purpose of containing a comprehensive mass of useful elementary facts concerning the people. These facts are to be classified, abstracted, and published, in such form, to such extent, and with such deductions, as shall be deemed useful and proper. An excellent plan for the abstracts, as to the ages, for general or sanitary purposes, is furnished in the example, (p. 34,) taken from the English census. The ages of the population of every county in the United States, and of every town in this State, should be abstracted in this way. Every census should be made under the superintendence of intelligent, competent persons, familiar with statistical science, and especially with that part of it which relates to human life,—its reproduction, its continuance, and its extinction. The value of the results will greatly depend upon the degree of intelligence applied to their production. The plan we recommend is not an exception to this general rule. Like others, it must have intelligence to carry it into successful execution; but, if so executed, it will secure a far more complete and perfect census than any hitherto taken. A competent central commission, at Washington, with power to appoint subordinate commissions in each state, has heretofore been recommended for the national census. For our State enumerations, we have proposed that they shall be made under the direction of the General Board of Health. The plan above recommended might be fully carried out by them, and as complete and as accurate a State census as can be desired, might thus be obtained. The same agency that abstracts and publishes information concerning the dead, should make and publish information concerning the living. The abstracts should be made on a uniform plan, so as to be easily compared together.

Every local Board of Health should have, for their own use, a manuscript Register of the Population of their own city or town, as proposed, with an index for reference to each family. It would be of great service in the various sanitary matters which might come before them.

Enumerations of parts of the population, for a special purpose, are often made. The number of children between certain ages is required to be known every year, as a basis for the division of the income of school funds, in different states. In a letter contained in the appendix to the fourth Registration Report, the writer said:—"The *educational age*, as fixed by the laws of Massachusetts, is 4 to 16. It seems to me, however, that this specific classification is injudicious, and that 5 to 15 would be better. The latter points or ages are universally adopted by nations, as important in the divisions of the population, and in the statistics of the dead; and there are many reasons why the educational age should be within these points. It would be less labor to make the enumeration; and, from examinations which have been made, it appears that the ages of children attending school more nearly correspond to them. Comparisons could be more readily made with the ordinary divisions of the population. I agree in opinion with a recent eminent writer, in thinking, in its application to schools, that 'hereafter 15 will be the age at which, in any census, it will be considered that, in the mass of the community, occupation begins, and education ends.'" In 1849, this hint was matured into a law; and 5 to 15 is *now* the legal Educational Age in Massachusetts.

XIII. We recommend *that the Constitution of the State be so altered, that the State Census shall be taken in* 1855, *and at the end of every subsequent period of ten years.*

The constitution of this State, as amended in 1839, [Chap. I, Sect. 2, Art. 1, and Sect. 3, Art. 2,] provides that "a census of the inhabitants of each city and town, on the first day of May, shall be taken and returned into the office of the Secretary of the Commonwealth, on or before the last day of June, of the year one thousand eight hundred and forty, and of every tenth year thereafter, which census shall determine the apportionment of senators and representatives for the term of ten years."[1]

The constitution of the United States originally provided [Art. I, Sect. II,] that "the actual enumeration [of the inhab-

[1] Rules and Orders of the House of Representatives, pp. 68, 100, 105.

itants] shall be made within three years after the first meeting of the Congress, and within every subsequent period of ten years, in such manner as they shall by law direct," for the purpose of determining the number of representatives which each state shall be entitled to send to Congress. And by the act of March 1, 1790, the first enumeration of the inhabitants of the United States was made that year. New acts have been passed, ordering new censuses every ten years, since that time. The seventh national census is to be taken this year, (1850.)

By the operation of these two constitutions, two enumerations of the inhabitants of this State were taken in 1840, are to be taken this year, and will continue to be taken at the end of each succeeding period of ten years, so long as neither of these constitutions remain unaltered. Two enumerations of the inhabitants of a place, made in the same year by different authorities, are not only inexpedient, but may be of positive inconvenience. If they should be essentially different, as was the case in some places at the last census, a doubt might be thrown over the authenticity of both, and neither taken as correct. Besides, two, if equally correct, would afford no information that one might not give. If one were taken in the intervening period, both would be of great value. Besides affording the means of showing the growth of different places, they would enable us to make much more accurate sanitary comparisons and deductions. The whole matter, too, being under the control of the State, such a plan might be adopted and successfully carried out, as would secure the best and most useful results, as suggested in the last recommendation. This period might also be used for the ascertainment of other statistics, beside such as relate to the population.

The words "in the year one thousand eight hundred and forty" occur three times in Sect. 2, Art. 1, and twice in Sect. 3, Art. 2; and the proposed amendment would require merely that the words *fifty-five* be substituted for the word *forty* in these five instances. It is worthy of consideration, however, whether the time for taking the census should not be the 1st day of July,—the middle of the year,—instead of the 1st day of May.

We are opposed to frequent alterations of the constitution of the State; but what we now recommend affects no principle. Its expediency and utility are so obvious, that it must commend itself to general approbation. The constitution of New York provides for a state census at the same period here proposed.

To avoid the expense and inconvenience of two enumerations, an arrangement has been proposed that the United States should unite with the State, and take one census only. But this has not been effected, because the United States could not with propriety delegate an authority to one state, to return a basis of representation, which it did not to another.

XIV. We recommend *that the laws relating to the public registration of births, marriages, and deaths, be perfected and carried into effect in every city and town of the State.*

We have already said that an accurate knowledge of the living inhabitants of a place forms the first element for estimating its sanitary condition. An exact knowledge of the births, marriages, and deaths, forms the second essential element. Without both of these elements, we cannot determine, with any considerable degree of accuracy, whether the public health at one place is better than at another, or whether at the same place it is better at one time than at another. By them we can determine both of these propositions.[1]

A new act relating to registration was passed on the 3d of May, 1849, and instructions have been prepared for carrying it into effect, and issued by the Secretary of State. The law is

[1] The following extract from the Quarterly Return of the Registrar-General in England, for April, 1850, shows some of the purposes to which this information may be applied:—"While the returns of the exports, imports, and revenue, furnish good indications of the production, consumption, and commerce of great classes in the country, the marriages, births, and deaths supply a surer test of the condition of the whole population. It is gratifying to find that the general results of both classes of returns are favorable. The marriages, which in 1847 were so much depressed, and increased almost imperceptibly in 1848, rose to 141,599 in the year 1849; and in the autumn quarter were 43,632; which is a higher number than has ever before been celebrated, excepting in the autumn quarter of 1845. The deaths have also declined; they were 98,607. The country, which, after the failure of the potato crop in 1846, was covered with funerals,—in the train of a multitude of diseases, and of two great epidemics, the fatal influenza of 1847–8, and the more deadly cholera of 1849,—is now in health again. The deaths in the first quarter of 1850 were less by 21,065 and 21,414 than the deaths in the corresponding quarters of 1847 and 1848. Fewer children have been left fatherless, fewer parents have been bereaved of their children. Sickness and suffering,—though perhaps not precisely in the same ratio as the mortality,—have diminished. The skilful and active industry of the kingdom has been less interrupted by the illness of workmen and the incapacity of masters; the parishes have had fewer poor to relieve; the friendly societies fewer sick members to support; insurance societies less to pay on policies; everything dependent on the duration of human life has been relieved of pressure; the minds of the people have not been irritated by hunger, fever, and discontent."

becoming more and more popular; and, if superintended by an efficient State agency, and faithfully carried into operation by the local authorities of all the towns, it may secure the many important benefits designed by its passage. The headings of the registry books now in use are as follows:—

Births in . *Registrar.*

No.	Date of birth.	Name, (if any.)	Sex and condition.	Place of birth.	Names of parents.	[BACK OF THE BOOK.]	Residence of parents.	Occupation of father.	Place of birth of father.	Place of birth of mother.	Informant.	When registered.
1	2	3	4	5	6		7	8	9	10	11	12

Marriages solemnized in , *County of* . *Registrar.*

No.	Date of marriage.	Names and surnames of groom and bride.	Residence of each at the time of marriage.	Age of each.	Occupation of groom.	Place of birth of each.	[BACK OF THE BOOK.]	Names of parents.	What marriage—whether 1st, 2d, 3d, &c.	Name and official station of the person by whom married.	Date of register.
1	2	3	4	5	6	7		8	9	10	11

Deaths in . *Registrar.*

No.	Date of death.	Name and surname of the deceased.	Age: Years. Months. Days.	Place of death.	Sex and condition.	Occupation.	[BACK OF THE BOOK.]	Place of birth.	Names of parents.	Disease, or cause of death.	Place of Interment.	Informant, or undertaker.	When registered.
1	2	3	4	5	6	7		8	9	10	11	12	13

The returns to the Secretary of State contain all the information in the books of records, excepting columns 11 and 12,

relating to births; 10 and 11, relating to marriages; and 12 and 13, relating to deaths. These returns are printed on paper of uniform size,—18 inches square,—and are designed to be bound into annual volumes. These volumes are thus easily accessible, and afford the means of investigating the operation of any diseases which prevail in the State, as well as the personal history of individuals.

A few important improvements should be made in the administration and execution of the law; and the local Boards of Health are authorized to make any regulations they may deem expedient for this purpose. Efforts should constantly be made to obtain the records of the events *at or near the time at which they take place.* When delayed to the end of the year, or even for a much shorter period,—owing to the frequent changes in the residences of our people, and to other causes,—mistakes and omissions are inevitable.[1]

The facts as to *births* might be obtained, by the clerks and registrars by their own personal agency, or by making proper arrangements with physicians, or by district officers of the town, or by requiring the parent or person interested to make the return within a fixed period, under penalty.

As to *deaths*, by the appointment of competent undertakers, and by requiring them to obtain and record, in each case, all the information desired, *before the burial.* The certificates of the causes of death should always be obtained, when practicable, from the attending physician; and we have no doubt that few instances would occur in which they would be refused, upon request. The English physicians, says a recent medical writer of the highest authority, "have daily and hourly written out the causes of death, bringing the whole knowledge of the profession to bear upon this single point, as unpaid services. In the aggregate, this labor has been enormous, but it has been given, freely rendered, by the profession, to the government, without fee or reward. It may seem a plain, unconsequential

[1] We are convinced, after repeated attempts, that it is impossible to obtain accurate accounts of *past, unrecorded events*, concerning either the living or the dead. Hitherto, every trial to obtain the number of births, marriages, and deaths, a year or more after they happened, has been a failure. This conviction has been expressed in relation to the national census this year. A strong desire, however, existed in the Census Board, that measures should be provided for obtaining the information; and a separate schedule in relation to deaths was prepared, at their request, for the purpose.

matter, this gratuitous return of the causes of death, but it makes up a bulk of unpaid service to the state, such as can be presented by no other body or profession in the empire." [1]

As to *marriages*, it is difficult to perceive a reason for going out of the State to be married, or for neglecting to have the marriage recorded, unless the parties are ashamed of the connection formed, or misapprehend the importance of the record to themselves personally, or to the public.

A new act relating to the publication of intentions of marriage was passed, March 28, 1850, which removes many of the salutary checks imposed by previous laws. Under this act, the parties, by entering their intentions in the office of the clerk, have permission to marry immediately, without the fourteen days' publishment heretofore required. Very properly, however, it does not supersede the necessity of entering the particulars concerning the parties, now required by law; and it imposes a penalty upon any one who does not give such information, whether married in the town or State, or not.[2]

[1] This duty is required by law in some places, under heavy penalties. The act in relation to public health in the city of New York, passed this year, has the following provisions:—

"SECT. 10. It shall be the duty of each and every practising physician in the city of New York,

"1. Whenever required by the Board of Health, or the Mayor and the Commissioners of Health of said city, to report to the City Inspector of said city, at such times, in such forms as said Board may prescribe, the number of persons attacked with any pestilential, contagious, or infectious disease, attended by such physician for the twenty-four hours next preceding, and the number of persons, attended by such physician, who shall have died in said city during the twenty-four hours next preceding such report, of any such pestilential, contagious, or infectious disease.

"2. To report in writing to the City Inspector, the Board of Health, or to the Mayor and the Commissioners of Health, every patient he shall have laboring under any pestilential, contagious, or infectious disease, and within twenty-four hours after he shall ascertain or suspect the nature of the disease.

"3. To report to the City Inspector, when required by the Board of Health, the death of any of his patients who shall have died of disease, within twenty-four hours thereafter such death shall have occurred, and to state in such report the specific name and type of such disease."

"SECT. 27. Every practising physician who shall refuse or neglect to perform the duties enjoined on him by the tenth section of this title, shall be considered guilty of a misdemeanor, and shall also forfeit for each offence the sum of two hundred and fifty dollars, to be sued for and recovered by the Board of Health."

[2] The following are the provisions of this act:—

SECT. 1. All persons intending to be joined in marriage, shall cause notice of their intentions to be entered before their marriage, in the office of the clerk, registrar, or other officer appointed for such purpose, of the city or town in which they may respectively dwell, (if within the State,) and if there be no such clerk in the place of their residence, the like entry shall be made with the clerk of an adjoining town.

SECT. 2. The clerk shall deliver to the parties a certificate under his hand, specifying the time when notice of the intention of marriage was entered with him, which certificate shall be delivered to the minister or magistrate in whose presence the marriage is to be contracted, before he shall proceed to solemnize the same.

SECT. 3. Whenever parties living in this Commonwealth shall go out of it for the purpose of having a marriage solemnized between them in another State, and a marriage shall be so solemnized, and they shall return to dwell here, they are hereby required to file a certificate or declaration of their marriage, including the facts concerning marriages now re-

Death affects the human race nearly according to a uniform law, modified in its operation only by exchange of circumstances; but it does not affect different ages alike, even if all other circumstances are the same. At some ages persons are much more liable to death than at others. Some, however, suppose that, in a school composed of youth, or in a manufactory composed of operatives of more advanced life, or in a prison or in the army, filled with persons in middle life, if the living to one death, or the average age at death, are the same as the whole population of the town or place where located, then their health would be the same; and if it differed, it would indicate a different degree of health. But it is not so. These are select lives, and they are governed by the laws of *their age* only, and not by those applicable to the whole population of the town, composed of persons of all ages. This matter is so little understood, and so many mistakes are made, even by eminent statists, that it should be clearly illustrated.

On returning to the table already given on page 35, the law of mortality is given for the whole of England, and for Surrey, one of the most healthy, and for Liverpool, one of the most unhealthy districts of England. Now let us suppose the existence of three communities, A, B, and C, each containing 1,000 persons, but differently constituted as to ages. In A there are 200 families, containing 100 persons between the ages of 30 and 40 years, 300 between the ages of 20 and 30; and each of these families contain, on the average, 3 children under 5 years of age. In B there are several boarding-schools, in the families connected with which there are 100 persons between 20 and 30 years, 300 scholars and other persons between 15 and 20, and 600 between 10 and 15. And in C, composed principally of elderly persons, there are 100 persons between 40 and 50 years, 300 between 50 and 60, 400 between 60 and

quired by law, with the clerk or registrar of the town or city where either of them lived at the time, within seven days after their return, under a penalty of ten dollars, to be recovered in the manner and to the uses specified in the third section of the "Act relating to the Registration of Births, Marriages, and Deaths," passed on the 2d day of May, 1849.

SECT. 4. The fee of the clerk or registrar for making the record of such marriage shall be fifty cents, to be paid by the said parties.

SECT. 5. So much of the seventy-fifth chapter of the Revised Statutes as is inconsistent with this act is hereby repealed: *provided, nevertheless,* that nothing herein contained shall be so construed as to modify or alter the provisions of the twenty-second section of the said seventy-fifth chapter, which relates to marriages among the people called Friends or Quakers, but the same shall remain in full force.

70, 150 between 70 and 80, and 50 between 80 and 90. And let us suppose that each of these communities have been subjected to the same sanitary laws, alternately, as the most healthy and the most unhealthy districts of England, as given in the table already referred to, and the result would be as in the following table:—

AGES.	Suppose the number and ages of the whole population in each of three different communities,—A, B and C,—are as follows:—			Subject these several populations, alternately, to the same rates of mortality in different localities, the number who would die,					
				In a healthy locality, would be			In an unhealthy locality, would be		
	In A.	In B.	In C.	In A.	In B.	In C.	In A.	In B.	In C.
Under 5,	600	-	-	24.73	-	-	86.23	-	-
5 to 10,	-	-	-	-	-	-	-	-	-
10 to 15,	-	600	-	-	1.90	-	-	3.78	-
15 to 20,	-	300	-	-	1.86	-	-	2.96	-
20 to 30,	300	100	-	1.90	.63	-	3.80	1.26	-
30 to 40,	100	-	-	1.00	-	-	2.16	-	-
40 to 50,	-	-	100	-	-	1.17	-	-	3.36
50 to 60,	-	-	300	-	-	6.85	-	-	15.91
60 to 70,	-	-	400	-	-	25.43	-	-	42.53
70 to 80,	-	-	150	-	-	23.01	-	-	31.11
80 to 90,	-	-	50	-	-	21.42	-	-	16.11
Total,	1000	1000	1000	27.63	4.39	77.88	92.19	8.00	109.02
Deaths in 100 living, or per cent.,				2.76	.43	7.78	9.22	.80	10.90
Or to the whole living, one in				36.19	232.55	12.84	10.84	125.00	9.17
The average age of each was				5.22	16.41	73.55	4.17	16.28	68.73

It appears from this table that in these three communities, under healthy circumstances, alike in all respects excepting age, the deaths were 27.63 persons, or 2.76 per cent., in A; 4.39 persons, or .43, or less than $\frac{1}{2}$ of 1 per cent., in B; and 77.88 persons, or 7.78 per cent., in C;—that there were living to 1 death, 36.19 persons in A; 232.55 persons in B; 12.84 persons in C;—and that the average ages at death of those who died were, 5.22 years in A, 16.41 years in B, and 73.55 years in C! And under unhealthy circumstances the facts as strikingly appear.

It may perhaps be said, that communities so constituted have never existed. They have not, exactly in this relation, but they may and actually do exist in some degree approximating to it. If so, nothing need further be given to illustrate

the incorrectness and even absurdity of using the average age at death, or the number of a population out of which one may die annually, alone, as accurate standards for sanitary comparisons. And it follows, also, that it is necessary, not only to know the number of the living at each age, but how much life is created and produced, or how many persons are born, on which the laws of mortality operate. By this knowledge alone we might estimate the number of deaths, and the average age at death, with considerable exactness.

The following principles may be considered as settled; though we have not space in this connection to illustrate them fully. They should govern all those who make sanitary surveys of different places or populations.

1. That a uniform law of mortality exists, which destroys more persons at one age than at another, in all other circumstances exactly similar; and that this law is modified in its operation in a healthy and in an unhealthy locality, only by its being less stringently regarded in the one than in the other.

2. That the generative power and ability to produce a healthy race is mainly ascertained by the number of marriages, the age at marriage, and the number of married persons living in the procreative ages, combined with other personal circumstances; and hence arises the sanitary importance of ascertaining in a census, as a characteristic of the population, the number of the married at different ages, and of recording each marriage and the age at marriage.

3. That when the number of births is great, the number of deaths is proportionally great, and the average age at death proportionally low; and that an excessive production of life is one of the *causes*, not *consequences*, of great mortality; and hence the number of births is a necessary element in estimating the sanitary condition of a population.

4. That the average age at death, as well as the aggregate number of a population out of the whole of which one dies annually, though interesting as a characteristic of the population, is a fallacious test of its sanitary condition; and cannot be employed alone, for that purpose, without leading to serious errors.

It can be applied, as an accurate test, only when the ages of the living inhabitants compared are alike.

5. That selecting a class of the population, such as the professional men, the tradesmen, the laborers, the rich, or the poor, and giving their average age, or the average number of years of life that either live less than the others, or that either lose more than the others, as a test of the sanitary condition of the class, may mislead the inquirer, and cannot be relied upon as an accurate test.

6. That the information concerning the rate of mortality supposed to have prevailed in past ages, when the calculations have been made upon the erroneous basis mentioned in the last two conclusions, cannot be taken as an exact test for comparison with the present age, without some allowance of error. Few observations concerning the living or the dead were made with accuracy in the olden times.

7. That the only accurate tests of measurement for one place are those founded on a joint comparison of the number of persons living at each age, with the number of deaths at the same age; or for different places, a comparison of the same facts regarding the population of the same ages in both places; or the same population, in two places, supposing it to be removed from the one place to the other.

8. That in estimating the effects of immigration and emigration on the sanitary condition of a population, the difference both between the ages of those who come in and those who go out, and the ages of the permanent population, must always be considered. Other circumstances being equal, a difference in this respect will produce a different rate of the whole mortality.

9. The same joint comparison should be made separately of the ages of the living and the ages at death of all who die, by each disease; in each season of the year; of each sex; of each occupation; and of those characterized by other circumstances. The number, as influenced by either of these circumstances, will be increased or diminished in proportion as more or less are found of one age more than of another. For this purpose

a variety of tables might be constructed to exhibit the facts in a condensed form.

10. That an accurate enumeration of the number, ages, &c., of living persons, and an accurate public registration of every birth, every marriage, and every death, with all the information desired relating to each, are absolutely essential as the foundation of every estimation of the sanitary condition of a population; and a sanitary survey, where this is wanting, can be of little value.

11. That for all practical purposes, as means of comparison, the living and the dead may be divided as to the ages, into decennial periods, or periods of ten years each, for those over twenty; into quinquennial periods, or periods of five years each, for those under twenty, and into each year of life for those under five years. This admirable division has been adopted in England, (see table, p. 34.) For special purposes three divisions should be made;—of those under 15, of those between 15 and 60, and of those over 60,—as the Dependent, the Productive and the Aged classes. The division, sometimes made between those under 20, and over 20, as "*boys* and *girls*," and "*men* and *women*;" or as "*children* and *adults*," is indefinite, unmeaning, and useless; as are also the ages 4, 8, 14, 16, 21, and 45, which have been sometimes used as dividing points.

12. That to secure such uniformity at different places and at different times, in the abstracts of the facts concerning the living inhabitants, and the dead, that each may be accurately compared together, both should be made under the superintendence of one agency, and that agency should be the General Board of Health.[1]

XV. We recommend *that provision be made for obtaining observations of the atmospheric phenomena, on a systematic and uniform plan, at different stations in the Commonwealth.*

The atmosphere or air which surrounds the earth is essential to all living beings. Life and health depend upon it; and neither could exist without it. Its character is modified in various ways; but especially by temperature, weight, and com-

[1] Those who may wish further information on the subject of Registration of births, marriages and deaths, may consult the books already referred to, in notes pp. 30–36, 55, 128.

position; and each of these modifications have an important sanitary influence.

The *temperature* of the atmosphere is measured by the rise and fall of the mercury in the *thermometer;* and it varies greatly in different times and seasons, and in different places. In Massachusetts, it sometimes rises 100 degrees above; and sometimes sinks to 20 or more below zero. Health is often affected when extremes of heat or cold are long continued, or when the changes from one to the other are sudden.

The *weight* of the atmosphere is determined by the rise and fall of the mercury in the *barometer.* This rise and fall is about 3 inches—generally from 28 to 31. It is seldom more than 2 inches in the same locality; and sometimes not more than 1. In Massachusetts the rise has been known to be as high as 31.11, and the fall as low as 28.47, showing a difference of 2.64 inches. The weight of the atmosphere at the earth's surface is 14.6 lbs. to the square inch. Allowing the surface of a man's body of medium size to be 15 square feet, or 2160 square inches, he suffers the enormous pressure of 31,536 lbs., or more than 15 tons! It is, however, generally unperceived, because the pressure is equal, within and without. It is only by its *variations* that we are affected. But these variations, when analyzed, will appear immense. *Each fall or rise of one tenth of an inch indicates a difference of about* 100 *lbs.* A fall of $\frac{1}{10}$ of an inch shows the removal of a pressure of about 100 lbs.; $\frac{2}{10}$, 200 lbs.; $\frac{5}{10}$, 500 lbs.; 1 inch, 1,000 lbs.; 3 inches, 3,000 lbs., &c. If these variations were sudden, inconvenient and fatal consequences might follow. When the pressure is removed we do not feel light as we should do by the removal of the same number of pounds of iron or other substance; but we feel sluggish, heavy and spiritless, owing to the excessive expansion of the fluids of the vessels, the nerves, and other living fibres, produced by an excessive expansion and escape of a portion of the air incorporated within them.

The atmosphere is *composed* of two principal gases, and they exist in all places in nearly the same proportions—about four-fifths of nitrogen and one-fifth of oxygen. The latter is the principal supporter of life. Other gases may also be dif-

fused in greater or less quantities. Brand's Encyclopædia of Science states the average ordinary composition per cent. of the atmosphere as follows:—

	By Measure.	By Weight.
Nitrogen,	77.60	75.55
Oxygen,	21.00	23.32
Aqueous Vapor,	1.32	1.03
Carbonic Acid,	0.08	0.10
	100.00	100.00

Aqueous vapor exists in greater and more varied proportions than carbonic acid gas, though the quantity of that gas is very different at different times and places. Sulphuretted hydrogen, ammonia, and other gases, may also be diffused in quantities so great as to be detected by the senses, or by chemical analysis, or so minute and inodorous as to escape detection, and in either case may be the cause of disease. Some idea may be formed of the almost infinite divisibility of matter, diffused in the atmosphere, from the fact that the hound in the chase discerns the track of man and animals by the odoriferous particles thrown off from their foot-prints; and that we detect the odor of musk, notwithstanding the single grain from which it proceeds was deposited twenty years previous, and has since been constantly diffusing its particles in the surrounding atmosphere!

The atmosphere is corrupted in various ways. Man himself cannot breathe the same air twice with impunity. Every minute of every day he appropriates to the vitalization of his blood 24 cubic inches of oxygen, and supplies its place with 24 inches of carbonic acid gas. When present in large quantities, from whatever cause produced, carbonic acid gas is destructive of life. Charcoal burned in a close room is an illustration. Some other gases are also very destructive. The experiments of Thenard and Dupuytren proved that birds perish when the vapors of sulphuretted hydrogen and ammonia exist in the atmosphere to the extent of a fifteenth thousandth part; that dogs are deprived of life when the air contains a thousandth part; and that man cannot live when the air he breathes is im-

pregnated with a three-hundreth part; and suffers in corresponding degree when a less proportion of these poisonous gases exists. Persons frequently fall dead when entering a well, vault, tomb, sewer or other place, filled with these gases, or with stagnated air in which are diffused emanations from decomposing animal, vegetable or mineral substances.

Such are a few only of the facts which illustrate the important agency of the atmosphere in the animal economy. What that peculiar condition is which produces a specific disease, or what changes produce different diseases, are as yet unknown; it has not been ascertained, "because meteorological science, as connected with the propagation and spread of disease, is as yet in its infancy. We have, indeed, some knowledge of the influence of two of the obvious conditions, namely, those of heat and moisture; but of the action of the subtler agents, such as electricity and magnetism, the present state of science affords us little information. Still there are unequivocal indications that there is a relation between the conditions of the atmosphere and the outbreak and progress of epidemic diseases, though we are as yet ignorant of the nature of that relation."[1]

"The earth, it is well known," says the Registrar General, "is surrounded by an atmosphere of organic matter, as well as of oxygen, nitrogen, carbonic acid, and watery vapor. This matter varies and is constantly undergoing transformations from organic into inorganic elements: it can neither be seen, weighed, nor measured. The chemists cannot yet test its qualities. Liebig, with all the appliances of the Giessen laboratory, cannot yet detect any difference between the pure air of the Alps, and the air through which the hound can tell a hare, a fox, or a man has passed; or the air which observation shows will produce small-pox, measles, scarlatina, hooping cough, dysentery, cholera, influenza, typhus, plague. These matters may either be in a state of vapor, that is elastic, or inelastic; or like water, they may exist in both states. They are most probably in the state of suspension; hang, like the smoke in cities, over the places in which they are produced, but are

[1] Report of the General Board of Health on Quarantine, p. 10.

spread and driven about like vesicular water in clouds. A stream of aqueous vapour of the same elasticity from the Atlantic, passing over England, is, in one place, perfectly transparent; in another, mist; in another, rain: so clouds of epidemic matter may fleet over the country, and in one place pass harmless by, in another destroy thousands of lives. The emanations from the living, the graves, the slaughter-houses, the heaps of filth rotting, the Thames,—into which the sewers still empty,—raise over London a canopy which is constantly pervaded by zymotic matters; in one season this, in another that, preponderating."

Although we are as yet uninformed on this subject, it is unreasonable to suppose that we shall always remain so. It opens a vast field for examination, which is as yet almost entirely unexplored; but it promises results of great value and importance to science and to human life. The meteorological observations, which have hitherto been made in this country, have been published rather as contributions to general science, than to show their specific relation to health. In England, and in some places on the continent of Europe, these observations are made with more care, and for a more specific purpose. For several years past Mr. Glazier, director of the Royal Observatory at Greenwich, has published his meteorological observations and remarks on the weather, in connection with the returns of the Registrar General of births, marriages and deaths.

[1] In Edinburgh, particular attention has been paid to the influence of atmospheric causes on the production of disease. Dr. James Stark, in his Report on the Mortality of Edinburgh and Leith, for the last quarter of 1847, (pp. 4 and 5) says, that the "Influenza suddenly attacked great masses of the population twice during the course of November; *first* on the 18th, and *again* on the 28th of the same month. In both these cases it appeared after a keen frost, and an excessively damp thick fog, which came on rather suddenly after a few days of very mild weather. The disease was therefore clearly dependent on atmospheric causes."

"Though influenza was so exceedingly general, it did not of itself materially increase the mortality during November; but this disorder and its atmospheric causes greatly increased the mortality of all other diseases. So much has this been the case, that from the 18th of November, when influenza first appeared, the mortality daily increased till it reached 61 deaths on the 30th day of the month. In fact, influenza and its atmospheric causes apparently attacked the weak point in every individual, be that the lungs, bowels, or other organs, and hastened to a fatal termination cases which, in ordinary seasons, might have survived for months or years."

Again, in his Report for June, July and August, 1848, the same author says:—"The influence of weather on disease was, however, still more strikingly manifested in regard to bowel complaints and affections of the organs of digestion, registered under the heads of diarrhœa, dysentery, cholera, teething, inflammation of the bowels, &c. During the heats of summer and autumn, these diseases in general become exceedingly prevalent and fatal, and it has been the too common belief that the use of fruit and vegetables was the cause of these affections. The mortality of these diseases, however, during the above months, most satisfactorily proves that these diseases do not depend on, or are caused by, the use of fruit

M. Quetelet, director of the astronomical observatory at Brussels, and other observers on the continent, have published similar observations. They afford an invaluable fund of information on the subject, and cannot fail to lead to important practical results.

We have supposed that a similar plan of observations might with advantage be introduced into our own State. Our desire has been that these observations should be made at six or eight different stations in the Commonwealth, on a uniform plan, in similar localities, at the same time of day, and by sets of similar instruments, each compared, corrected, and made to agree with a common standard; and that these observations should be analyzed, abstracted, combined, and published by a compe-

and vegetables as articles of diet, but that atmospheric agencies, and in especial, temperature, exert a most marked influence on their prevalence and fatality.

During 1847, when the mean temperature of these months was 59.09 degrees, the barometric pressure above the average, and the air very dry, the deaths above 60 rose to the proportion of 15 out of every 100 deaths at all ages. And during 1846, when the mean temperature was still higher, viz., 60.76 degrees, the barometric pressure above the average, and the fall of rain excessive, the proportion of deaths among the aged rose to 18 per cent. of the total deaths. The greatest absolute number of deaths, however, among the aged occurred during the three months of 1847, when the mean temperature was high and the atmosphere very dry. In former reports the baneful effects of a low temperature on the aged have been frequently pointed out. The facts, therefore, stated in this and former reports seem to warrant the conclusion that a mean temperature such as we have had this year, with a moderately moist condition of the atmosphere, and a low barometric pressure, are the conditions of the atmospheric phenomena which are most favorable to the health of those advanced in years. But, in fact, these are the conditions most favorable to life at all ages, seeing the above facts seem to prove that though excessive heat, generally speaking, is most baneful to certain classes of disease, even these, under the same temperature, are rendered more or less fatal according as the atmosphere is more or less dry or humid. Thus extreme heat with drought seems to cause a greater mortality among those laboring under diseases of the respiratory organs, and of the brain, as well as in all persons above 60 years of age, than when an equally high temperature is accompanied with considerable atmospheric moisture. On the other hand, bowel complaints and heart diseases seem to be more under the influence of temperature alone.

These facts relative to the influence of atmospheric agencies on disease might be rendered more tangible by arranging them in a tabular form. The following table, then, exhibits the influence of weather on disease, by showing the varying number of deaths in the population of Edinburgh from certain classes of disease during the months of June, July, and August of the years 1846, 1847, and 1848.

Diseases.	1846. Heat great; moisture excessive; high barometric pressure. Mean Temperature, 60.76 degrees. Fall of Rain, 12.77 in. Mean Barom. 29.68 in.	1847. Heat great; drought great; high barometric pressure. Mean Temperature, 59.09 degrees. Fall of Rain, 4.07 in. Mean Barom. 29.70 in	1848. Heat moderate; moisture moderate; low barometric pressure. Mean Temperature, 55.79 degrees. Fall of Rain, 9.40 in. Mean Barom. 29 36 in.
Respiratory Organs, - -	219	280	180
Bowel Complaints, &c. -	173	177	150
Or during August, -	81	71	33
Brain Diseases, - - -	116	120	79
Heart Diseases, - - -	29	26	21
Aged above 60, - - -	180	242	124
Or per centage of Aged to total mortality,	18	15	13

tent agency, and accompanied by such general remarks and deductions as they might suggest, in connection with the sanitary reports of the General Board of Health. To ascertain how far our plan was practical, and might be approved by competent judges, we addressed a communication to Wm. Cranch Bond, Esq., of the Cambridge Observatory. His communication appears in the appendix, together with an extract from the report of the Royal Observatory at Greenwich.

After the above was written, the legislature passed the following "Resolve relating to meteorological observations."

"*Resolved*, That his excellency the governor be authorized and requested to fix upon suitable stations, not exceeding twelve in number, in which shall be included the three Normal Schools and the three Colleges in this Commonwealth, where shall be deposited the instruments necessary for making systematic observations in meteorology, according to the plan recommended by the Smithsonian Institute, at an expense not exceeding one hundred dollars for each station, to be defrayed from the school fund, and that he be authorized to draw his warrant therefor accordingly."

If suitable agents are appointed under this resolve, our recommendation can be fully carried out without further legislation.

XVI. We recommend *that, as far as practicable, there be used in all sanitary investigations and regulations, a uniform nomenclature for the causes of death, and for the causes of disease.*

In making a survey of different places, or different articles, it is proper that uniform names should be given to measures and weights; and that uniform instruments should be used. In a sanitary survey the causes of death and the causes of disease will be the principal objects of investigation; and it is expedient, and even necessary, that such names should be given to each as have a definite meaning and can be universally applied. They are the measures and weights,—the instruments by which the computations are to be made. Without such a uniform standard of comparison no just conclusions can be drawn. It would be equally proper to use Fahrenheit's thermometer in one place and Reaumur's in another, to estimate the compar-

ative temperature of the atmosphere; or two different kinds of instruments as measures of weight and length, in other matters, as to use one name or classification of causes of death, or causes of disease, in one place, and a different name or classification for the same causes in another. Hence the reason for the above recommendation in a plan for a sanitary survey of the State will be apparent.

A report containing a nomenclature and classification of the *causes of death* was drawn up, and adopted by the National Medical Convention in 1847. Extracts from a revised copy, approved by the Massachusetts Medical Society, are inserted in the appendix. We hope that the directions and suggestions they contain will be carefully observed by all physicians, and others concerned in carrying the sanitary laws of the State into effect.

The *causes of disease*, in all sanitary inquiries, deserve equal, if not greater attention, than disease itself. They have been differently classified and named by different authors. By some they have been divided into *external* or *extrinsic*, and *internal* or *intrinsic;* by others, into *principal* and *accessory;* and into *remote* and *proximate;* and in other ways. Copland, (Diction. Vol. I, page 645,) divides them into four classes,—*predisposing*, *exciting*, *specific*, and *determining* or *consecutive* causes; and makes several sub-classes under each. Bigelow and Holmes (Marshall Hall's Practice of Medicine, Am. Ed. pp. 67–83) divide them into *general* and *specific* causes; and subdivide the former into *predisposing* and *exciting*, and the latter into *contagious* and *non-contagious*. Williams (Principles of Medicine, p. 23, Am. Ed.) divides them into *predisposing* and *exciting* causes; and makes a subdivision of the second into *cognisable* and *non-cognisable agents*. None of these classifications, however well they may be adapted for professional use, seem well designed for general sanitary purposes. They are not sufficiently clear to be generally understood and practically useful. Bigelow and Holmes say, this classification "must be considered convenient rather than strictly philosophical." Even Williams himself says that "these divisions of causes are rather conventional and convenient than natural and philosoph-

ical;" and every one who may examine them will probably come to the same conclusion. It is easy to perceive that one may be a predisposing cause in one case and an exciting cause in another; and vice versa, according to circumstances.

As in the nomenclature and classification of causes of death it has been found difficult to make one which shall be universally approved, so in classifying the causes of disease the same difficulty may occur. Yet we deem it proper to recommend that all causes of disease should be divided into three general classes:—1. ATMOSPHERIC; 2. LOCAL; and 3. PERSONAL.

I. Under ATMOSPHERIC CAUSES, we would include those to which all persons in a country or district, in circumstances in all respects alike, are equally exposed. *Sub-classes;* 1. Climate; 2. Seasons; 3. Winds and weather; 4. Electricity; 5. Atmospheric weight, temperature, moisture, and composition; 6. Malaria; 7. Unknown conditions of the atmosphere. What have been called epidemic causes of disease come under these classes.

II. Under LOCAL CAUSES we would include those to which persons living in a particular neighborhood or dwelling house, in circumstances in all respects alike, are equally exposed. *Sub-classes;* 1. Elevation or depression of situation; 2. Deficiency or impurity of water; 3. Defective sewerage, drainage, and surface cleansing; 4. Animal and vegetable effluvia; 5. Confined and corrupted air; 6. Irregular and imperfect supply of light and heat; 7. Filthy or damp habitations; 8. Existing contagious diseases; 9. Unknown local causes. What have been called endemic causes of diseases come under these classes. We would, however, restrict them to a particular house, street, or neighborhood. When the influence spreads over a whole town or district, it becomes an atmospheric cause.

III. Under PERSONAL CAUSES we would include those which originate with the person alone, independent of atmospheric or local causes. *Sub-classes;* 1. Hereditary constitution, organization or vitality; 2. Acquired constitution, organization or vitality; 3. Deficiency and excess in quantity, and improper kind of food; 4. Improper quantity and kind of clothing; 5. Occupations and habits; 6. Excessive physical exertion; 7. Excessive

mental action; 8. Alienation of mind; 9. Exposure; 10. Personal contact with a diseased person, virus or poison; 11. Violence and accidents; 12. Unknown personal causes.

Atmospheric, and local, and personal contagion may exist as causes of disease. Some diseases can be communicated only by actual contact with another person, or with the poison of the disease of the person; as itch, syphilis, necusia, &c. This is *personal contagion.* Others may be communicated either by contact with the air of the locality where the diseased person is or has been; as small-pox, measles, &c.; or with the poisonous emanations from decomposing animal or vegetable matters, or from other substances; this is *local contagion.* Others may be communicated by contact with the atmosphere while in a peculiar condition; as influenza, dysentery, cholera, &c.; this is *atmospheric contagion.* All these kinds of contagion may exist, to a greater or less extent, and press upon us with greater or less power.

Atmospheric contagion is generally harmless unless attracted by local causes; and if atmospheric and local contagion be combined, it may be successfully resisted by a person fortified with sufficient personal vitality. There seems to be a chemical affinity between the epidemic constitution of the atmosphere, and filth and unfavorable local circumstances, which combine readily with the conditions of the particular persons whom it affects; and the combination gathers together the poison of disease in so great intensity that few who are exposed are able to resist it. Under such circumstances those who are healthy, and live temperately and regularly, often escape; while the debilitated, intemperate, irregular livers, generally become victims! An illustration of this fact may be drawn from the history of that terrible disease, the Asiatic Cholera,—a disease which derives its terrific power chiefly or entirely from the accessory or accompanying circumstances which attend it. It bounds over habitation after habitation where cleanliness abides; and generally leaves unharmed those inmates who have preserved and improved their natural constitutions: whilst it alights near some congenial abode of filth or impurity, and finds sub-

jects prepared for easy conquest by previous violations of the laws of health and life.

Dr. Mitchell, of Philadelphia, suggests the "cryptogamous" origin of epidemic diseases, and some English periodicals have speculated on the alleged discovery of sporules or organic cells, as causes of cholera. But it would seem difficult to ascertain the cause of these causes, even if they are causes, (which is yet to be proved,) without looking to some peculiar antecedent atmospheric condition to account for their production.

If this were the proper place it would be easy to show that this classification is more natural, simple, comprehensive, and philosophical, and better adapted to general practical purposes, than the classifications in general use. The extracts we have already given under our XVth recommendation, prove that a similar distinction has been indirectly acknowleged by the best medical writers. Many other similar quotations might be given. We are aware that it may sometimes be difficult exactly to draw the line which separates atmospheric from local causes, though not, as seems to us, for general purposes, in the restricted sense in which we use the terms. It seems to us that any ætiologist would have more difficulty in drawing definite lines to separate contagious from infectious, or predisposing from exciting, or cognizable from non-cognizable causes of disease.

XVII. We recommend *that, in laying out new towns and villages, and in extending those already laid out, ample provision be made for a supply, in purity and abundance, of light, air, and water; for drainage and sewerage, for paving, and for cleanliness.*

It is a remarkable fact, that nearly the whole increase of the population of Massachusetts, during the last twenty years, is to be found in cities and villages, and not in the rural districts. The tendency of our people seems to be towards social concentration. And it is well to inquire what will probably be the consequences of these central tendencies; and how, if evils are likely to arise from this cause, they may be avoided. It has been ascertained that the inhabitants of densely populated places generally deteriorate in vitality; and that, in the

course of years, families frequently become extinct, unless recruited by a union with others from the country, or with other blood of greater vital force. This is a significant fact, which should be generally known. Cities are not necessarily unhealthy, but circumstances are permitted to exist, which make them so.

"Every population throws off insensibly an atmosphere of organic matter, excessively rare in country and town, but less rare in dense than in open districts; and this atmosphere hangs over cities like a light cloud, slowly spreading—driven about—falling—dispersed by the winds—washed down by showers. It is matter which *has lived*, is dead, has left the body, and is undergoing by oxidation decomposition into simpler than organic elements. The exhalations from sewers, churchyards, vaults, slaughter-houses, cesspools, commingle in this atmosphere, as polluted waters enter the Thames; and, notwithstanding the wonderful provisions of nature for the speedy oxydation of organic matter in water and air, accumulate, and the density of the poison (for in the transition of decay it is a poison) is sufficient to impress its destructive action on the living—to receive and impart the processes of zymotic principles—to connect by a subtle, sickly, deadly medium, the people agglomerated in narrow streets and courts, down which no wind blows, and upon which the sun seldom shines.

"It is to this cause that the high mortality of towns is to be ascribed; the people live in an atmosphere charged with decomposing matter, of vegetable and animal origin; in the open country it is diluted, scattered by the winds, oxydized in the sun; vegetation incorporates its elements; so that, though it were formed, proportionally to the population, in greater quantities than in towns, it would have comparatively less effect. The means of removing impurities in towns exist partially, and have produced admirable effects; but the most casual observation must convince any one that our streets were built by persons ignorant as well of the nature of the atmosphere, as of the mortality which has been proved to exist, and is referable to causes which, though invisible, are sufficiently evident.

"The occupations of men in towns are mostly carried on

in-doors, often in crowded workshops, while the agricultural laborer spends the greater part of the daytime in the open air. From the nature of the particles of animal matter thrown into the atmosphere, it is impossible to place the artisan in circumstances as favorable as the laborer; the sun and wind destroy and waft away the breath as soon as it is formed; but in the workshops of towns the men are shut from the sun, and no streams of the surrounding air carry off the steaming breath and perspiration, so that the mortality of workingmen in the metropolis is much greater than the mortality of women at the corresponding ages." [1]

The different sanitary investigations in England have related principally to the subjects suggested in this recommendation; and facts have been brought to light, in relation to the manner in which many human beings live, that have made a profound impression upon the public mind.

"There are," says Dr. Simon, "many, very many courts and alleys hemmed in on all sides by higher houses, having no possibility of any current of air, and (worst of all) sometimes so constructed, back to back, as to forbid the advantage of double windows or back doors, and thus to render the house as perfectly a *cul-de-sac* out of the court, as the court is a *cul-de-sac* out of the next thoroughfare.

"It is surely superfluous to observe that these localities are utterly incompatible with health. Among the dense population it is rare to see any other appearance than that of squalid sickness and misery; and the children, who are reproduced with the fertility of a rabbit warren, perish in early infancy. In the worst localities probably not more than half the children born survive their fifth year, and of the 3,799 deaths registered last year in the city of London generally, 1,410 were at or under seven years of age.

"The diseases of these localities are well marked. Scrofula more or less completely blights all that are born, often extinguishing life prematurely; in childhood, by hydrocephalus; in youth, by pulmonary and renal affections, which you read of as consumption and dropsy, often scarring and maiming where it

[1] Fifth Report of the Registrar-General, pp. 418, 419, 420.

does not kill, and rendering life miserable by blindness, decrepitude or deformity; often prolonging itself as an hereditary curse in the misbegotten offspring of those who, under such unnatural conditions, attain to maturity and procreation. Typhus prevails there, too, not as an occasional visitor, but as an habitual pestilence.

"It is impossible for me, by numbers, to give you an exact knowledge of the fatality of such spots, because, in the greater part of the city, hospitals, dispensaries, and private practice divide the treatment of the sick with the parochial officers, and diminish the returns of sickness which those officers would otherwise have to show. But this I may tell you, as an illustration of what I state, that in the few houses of Seven-Step Alley, there occurred last year 163 parochial cases of fever; in Princes Place and Princes Square, 176 cases; that behind the east side of Bishopsgate, in the small distance from Widegate Street to New Street, there were 126 cases; that behind the west side, from Primrose Street to Half-moon Street, there were 245 cases; that the parish of Cripplegate had 354 cases over and above the number (probably a very large one) treated by private practitioners, by hospitals, and especially by dispensaries. Similarly, though with less perfect information, I am enabled to trace fever to a terrible extent in very many other localities of the city, even on the verge of its better residences, and close behind its wealthiest thoroughfares.

"It was in districts such as these that, in 1665, the Great Plague of London found the readiest facilities for its reception; and it was by the destruction of such districts that the Great Fire of the following year rendered the utmost conceivable service to the sanitary progress of the people, and completed their emancipation from the horrors of an unparalleled pestilence. Long intervening years have sufficed to reconstruct these miserable habitations almost after their first type, and to reëxemplify all the evils which belong to them; so completely, indeed, that if the infection of that same plague should light again amongst us, I scarcely know why it might not traverse the city and decimate its population as quickly and as virulently as before. Meanwhile, however, typhus, with its kindred

disorders, and the occasional epidemics of influenza, cholera, and other diseases, maintain their attachment to the soil, and require no further reinforcement from the pestilence of other climates."

This picture is reproduced, sometimes with more frightful details, in very many places in Europe, and in this country—in *Massachusetts!* The evils which it portrays may not exist to so great extent with us, as in the ancient cities and populous places of the old world; but even here their magnitude is very much greater than is generally supposed. Places may be found in the cities and towns of this State, as we shall show further on, that are scarcely to be paralleled in England. This fact will be developed to the astonishment of any one who makes the examination. These evils seem almost inseparable from all densely populated places, so long as the people remain uninstructed and not cared for. It is of the highest importance, then, that all proper sanitary measures should be adopted to prevent those calamities which have been suffered elsewhere, and which will inevitably increase with us, unless seasonably prevented.

1. "*Light*," says the Liverpool Health of Towns Advocate, (p. 125,) "is necessary to health. Dr. Edwards, of Paris, has shown, that if tadpoles be deprived of light, they do not advance beyond that state of development, however well they may be fed, although they increase in size; and he thence concludes, 'that the action of light tends to develop the different parts of the body in that just proportion which characterizes the type of the species:' and that, in warm climates, 'the exposure of the whole surface of the body to light will be very favorable to the regular conformation of the body.' Baron Humboldt strikingly corroborates this opinion, for he says, after a five years' residence amongst many American tribes, 'I have not seen a single individual with a natural deformity.' *We may thus conclude that abundance of light is essential to the proper development of form in man:* and it follows, as a consequence, that if children, at the time of early growth, be deprived of this necessary agent, their development will be materially modified, and the foundation for a weak constitution will

be laid, and consequent incapacity for labor, and tendency to disease superinduced. Dr. Edwards gives it as his opinion that 'the want of sufficient light must constitute one of the external causes which produce these deviations of form in children affected with scrofula; which conclusion is supported by the observation, that this disease is most prevalent in poor children, living in confined and dark streets.'

"The opinions of Dr. Edwards are fully borne out by Mr. Ward, in his evidence before the Sanitary Commission. He says that his experience 'most strongly' bears out these statements; and that, 'from noticing hundreds of times the beneficial consequences of the alteration from darkness to light, and the evils resulting from the want of light, I am satisfied that it is a matter of the highest importance.'

"'My advice to young people who are about to marry, and can afford only one or two rooms, is, to choose the largest room they can find, and in which they can obtain the greatest quantity of solar light; the amount of disease in light rooms, as compared with that in dark rooms, being infinitely less.'

"Other medical observers have arrived at similar conclusions. Sir James Wylie relates a remarkable instance in point, in regard to an extensive barrack in St. Petersburg, one side of which was exposed to the light, and the other was comparatively dark. The result to the soldiers living in the building was, that uniformly, for many years, there were three times as many taken ill on the dark side as were attacked on the light side of the barrack. We need hardly insist on the importance of these facts, as showing that the want of light predisposes to disease."

2. *Air.* We have already spoken (pp. 143–148) of this important element, and shall hereafter refer to works where the subject is fully discussed. Streets should be of sufficient width to permit a free circulation of air. Restrictions should be so imposed as to permit few lanes, alleys, and courts, and none that would so obstruct the circulation as to endanger the public health. Every place from which light is excluded, or into which pure air, in any desirable quantities, cannot at pleasure be introduced, should be pronounced unfit for habitation.

3. *Water.* "The following are the chief conditions in respect of water supply, which peremptorily require to be fulfilled:—

"1. That every house should be separately supplied with water, and that where the house is a lodging-house, or where the several floors are let as separate tenements, the supply of water should extend to each inhabited floor.

"2. That every privy should have a supply of water applicable as often as it may be required, and sufficient in volume to effect, at each application, a thorough flushing and purification of the discharge pipe of the privy.

"3. That in every court, at the point remotest from the sewer grating, there should be a stand-cock for the cleansing of the court; and

"4. That at all these points there should always and uninterruptedly be a sufficiency of water to fulfil all reasonable requirements of the population."[1]

"We must have *soft* water. All hard waters are expensive, both for domestic consumption and manufacturing purposes. This hardness arises from the presence of earthy and saline substances, which decompose and destroy a certain quantity of soap in washing, and occasion a larger consumption of that article than necessary. It has been proved that the water which supplies Aberdeen contains only one grain per gallon of hardness, while that of Manchester contains fourteen grains. The water at present supplied to Liverpool contains rather more; but we may assume the hardness at fourteen grains per gallon. Now Dr. Playfair has shown that water with fourteen grains per gallon *destroys and renders useless* a quantity of the soap used for washing purposes, equal in value to 16s. 8d. a year, to a family of five individuals. If we assume the present population of Liverpool at 330,000, and suppose there were a supply of water, of the same quality now used, adequate to the wants of that population, there would be an extra expense of no less than £55,000 a year to the town, in addition to the wear and tear of clothes. Water, however, could not be obtained quite pure, but if it could be had with a hardness of two degrees a

[1] Dr. Simon's Report, p. 19.

gallon, *which we believe to be quite possible*, a saving would be effected to the town of nearly £50,000 a year; and this without taking into account the saving accruing in manufactories, steam boilers, breweries, &c. It is a low estimate, therefore, to state the *hard water tax* of Liverpool at £50,000 a year, every farthing of which is actually *thrown away, without any return whatever*. Now this sum represents a capital of *one million and a quarter sterling*, at four per cent." [1]

Several cities and villages in Massachusetts have constructed other works besides wells to supply them with water. Boston, by a structure that for artistic skill and thorough workmanship is probably unsurpassed any where, has introduced, at an expense to the city of about $5,000,000, the water of Lake Cochituate, nineteen miles and a half distant; and it affords to every inhabitant an abundant supply of water of the best quality.

4. *Drains and Sewers* should be made to carry off water introduced in any way into cities and villages. If the surplus be permitted to remain, it often becomes stagnant and putrid, and is then a fruitful source of disease. "Without a system of drains, a large supply of water is rather injurious than otherwise; yet without a plentiful supply there can be no drainage at all." Every city and village should be surveyed; and the elevations of the crossings of each street above a common level, and its descent to an outer termination, should be laid down and marked upon a public plan; so that all abutters, and others interested, may be guided to the proper construction of buildings with reference to drains and sewers. Some general, definitive plan should be fixed upon for each city and village, and when so fixed it should be uniformly carried out under one authority, as circumstances may require. Surface drains will answer for some localities, but underground sewers are generally to be preferred. Boston has about 35 miles of such sewers.

5. *Paving* is of great importance as a sanitary measure. The following are the conditions requisite for a good system:—

"1. Pavements should be made as impervious to fluids as possible, otherwise the subsoil remains moist, and becomes im-

[1] Liverpool Health of Towns Advocate, p. 131.

pregnated with matters deleterious to the purity of the atmosphere. All stone pavements should therefore be closely joined; and consequently those made of round boulders are inadmissible for sanitary purposes. Wood pavements are decidedly injurious to health. The street pavements in some of the Italian cities are better than ours for drainage. They consist of polygonal blocks of limestone, the joints of which are acccurately fitted together with cement, so that the rain water flows off as easily as from the roof of a house, and there are neither ruts nor hollows. The old Roman pavements were similarly constructed.

"2. Great care should always be taken to prevent the formation of pits and hollows, which are always injurious to health, by permitting the retention of solid and fluid substances in a state of decomposition, and presenting great obstacles to cleansing.

"3. All courts and passages should be *flagged;* the common paving is inadequate for sanitary purposes in such localities.

"4. A complete reform should be effected in the manner of constructing street gutters. If any one will take the trouble to go through the town on a wet day, he will be astonished to find how many of these conduits have the property of retaining the water, instead of facilitating its passage into the sewer. It should never be forgotten that a badly made gutter is literally worse than none; for it only draws the foul water from the street nearer the doors of dwellings, while the spaces between the stones allow of its free passage into the subsoil, so as to render the houses more damp than they would otherwise be. Perfect smoothness, and proper adaptation of the stones, along with a proper *continuous* declivity, are indispensable requisites in a well made gutter."[1]

6. *Cleanliness* in towns is of such immense importance to health, that it should constitute an indispensable part of sanitary police. The only safe rule is, to remove out of a town, and out of a house, all refuse as soon as it is produced. Refuse matters, either animal or vegetable, are constantly undergoing change, and giving out vapors and gases which, even in ex-

[1] Liverpool Health of Towns Advocate, p. 99.

tremely small quantities, are injurious to health, especially if they are constantly inhaled. Conclusive proofs of this fact exist. Wherever there is a dirty street, court, or dwelling-house, the elements of pestilence are at work in that neighborhood. The cause of many and many a case of typhus fever, cholera morbus, or other fatal diseases, in our cities, villages, and even in the rural and isolated dwellings of the country, may be traced to decayed vegetable matter, or other filth, in the cellar, in or around the house, or in the water used. The most perfect cleanliness is necessary in all places, but especially in confined localities, to preserve the public health; and nothing ought to be permitted to interfere with it. It must never be forgotten that we have to do with *life*. It is not a question of convenience, or personal annoyance, but one of health. No person, therefore, should be permitted, on any plea of interest, to tamper with this matter; and every nuisance that occasions filth in streets or courts, or that accumulates it on any other surfaces, should be abated; if not otherwise, by the arm of the law. It is sometimes necessary to constrain men to do what would be useful, and to avoid what would be injurious to them. No person should be permitted to contaminate the atmosphere of his own house, or that of his neighbors, by any filth or other substance dangerous to the public health. Such a person should be looked upon as worse than a highway robber. The latter robs us of property, the former of life.

XVIII. We RECOMMEND *that, in erecting schoolhouses, churches, and other public buildings, health should be regarded in their site, structure, heating apparatus, and ventilation.*

To provide for all public buildings, where large numbers of people congregate, an abundant and constant supply of air, in its pure, natural state, and of a proper temperature, is a very important, though difficult matter. It is so, too, in regard to private dwellings. It has received much theoretical and practical attention, and very many schemes have been devised to attain the object. Which of them is to be preferred, or whether any one as yet known is unobjectionable in a sanitary view, we are unprepared to decide. If the measures here proposed should be adopted, the General Board of Health would become ac-

quainted with the different methods of constructing and ventilating public and private buildings, and would be able to recommend to the local Boards of Health, and to the people generally, those plans which seem best adapted to the circumstances of each case. Such information would be of great importance, whether regarded as contributing to the pecuniary or sanitary welfare of the people.[1]

[1] "The importance of free ventilation will appear from the statement of a few simple facts:—

"The object of respiration is to bring the oxygen of the air in contact with the blood, by which the latter is deprived of its carbonic acid, and absorbs a new supply of oxygen. When the atmospheric air is taken into the lungs, it consists of about 79 per cent. of nitrogen, and 21 per cent. of oxygen, and nearly 1 per cent. of carbonic acid; when it is expelled, it is found to have lost about 9 per cent. of its oxygen, the place of which is supplied by an equal amount of carbonic acid. At the same time the blood has undergone an important change, from a dark purple hue, indicative of carbon, which is unfitted for the support of animal life, to a highly oxygenized fluid of a florid red color, carrying health and vigor to every fibre of the body.

"It is not our purpose to inquire into the manner in which these changes are effected: it is sufficient for us that they are produced, and that they are absolutely essential to the existence of animal life.

"As the rapidity with which the air is vitiated is not generally appreciated, the following calculations may not be unimportant: An individual breathes, on an average, from 14 to 20 times in a minute, and inhales from 15 to 40 cubic inches of air at each inspiration. According to Southwood Smith, it appears that in one minute an individual requires 616 cubic inches, or about 18 pints of air; and that, during the same space, 24 cubic inches of oxygen have disappeared, and been replaced by a like amount of carbonic acid; so that, in one hour, each adult person vitiates the air by the subtraction of 1440 cubic inches of oxygen. In one hour the quantity of air inspired amounts to 2 hogsheads, 20 gallons, and 10 pints; in one day, to 57 hogsheads, 1 gallon, and 7 pints; and, during the same period of time, 24 hogsheads of blood, or 1 hogshead each hour, and 144 ounces each minute, are sent to the lungs, to undergo the change already pointed out. Supposing 1 pint of air to be inhaled at each inspiration, which is very nearly the quantity, the amount decomposed is about one-fourth, or a quarter of a pint; so that each individual actually vitiates or poisons one-fourth of a pint of air every time he breathes. The rapidity with which this deteriorating process goes on is very clearly shown by placing a mouse under a large, tight glass jar, full of air. In a few moments it becomes uneasy, pants for breath, and in a short time dies in convulsions.

"There is another cause of deterioration of the air, not generally taken into account, which is of considerable importance. An adult gives off, by insensible perspiration, from 12 to 30 grains of vapor per minute; and it is ascertained that the air which has been some time in contact with the skin becomes chiefly carbonic acid gas. Tredgold states that it is desirable to change as much of the air of the room as the moisture given off would saturate in the same time. Accordingly, in a room at 60°, on the supposition, which is probably very nearly correct, that the moisture given off amounts to 18 grains, it will be necessary to change three cubic feet of air per minute for each individual in the room. If the temperature of the room be high, the exhalations of course will be in proportion.

"Our rooms and public halls have also to be lighted at night; and here is another source of deterioration of the air. Each gas-burner is found to consume as much oxygen as eight candles, and each candle renders about 300 cubic inches of air unfit for breathing every minute; so that two candles deteriorate the air as much as one individual. The total quantity of air, then, which will be vitiated by these causes, for each person, will be—

By respiration,	. .	800 cubic inches per minute.
By exhalation,	. .	5,184 " " " "
By lights,	. . .	432 " " " "
Total,	. .	6,416 cubic inches,

Or nearly 4 cubic feet, per minute. It is necessary, therefore, in order to preserve the purity of the air, that the above quantity should be changed every minute. For example: If a room contains 200 people, there should be 800 cubic feet of air changed every minute, or more than would fill a room nine feet square and nine feet high; 400 people will require 1600 cubic feet of fresh air every minute. From the above estimates, any person may calculate the rapidity of deterioration in a close room, of given dimensions, occupied by a given number of individuals."—*Dr. Charles A. Lee: Am. ed. Copeland's Medical Dictionary, Vol. I, pp.* 137, 138.

XIX. We recommend *that, before erecting any new dwelling-house, manufactory, or other building, for personal accommodation, either as a lodging-house or place of business, the owner or builder be required to give notice to the local Board of Health, of his intention and of the sanitary arrangements he proposes to adopt.*

The information which such a regulation might secure, would show the growth of a place, and the increase of house accommodations, but it would secure a much more important object. It would place within the possession of the local Board of Health a knowledge of the sanitary arrangements of every house. It is not intended that this regulation should interfere in the least degree with private rights, but confer a mutual substantial benefit. The Board of Health are supposed to possess a much better knowledge, generally, of the methods of constructing dwelling-houses, in regard to the particular sanitary objects they have in view, than the great mass of the people ; and few persons, it is supposed, will be found, who will not feel grateful to them for any suggestion which might lead to real improvement. It is designed to be suggestive merely, not compulsory, unless a public injury is inflicted ; then it will become the duty of the Board to interfere. A regulation similar to this exists in New York, Philadelphia, and many other places ; and is found to work so well as to be worthy of general adoption.

XX. We recommend *that local Boards of Health endeavor to prevent or mitigate the sanitary evils arising from overcrowded lodging-houses and cellar-dwellings.*

Such places are universally acknowledged to be incompatible with health. The hints already given, (p. 145,) have shown the destructive influence of corrupted air. Such air exists in these places, to a great extent, and its deleterious effects should by all proper means be avoided. This matter has attracted much though not the undeserved attention of different sanitary inquirers. Dr. James Stewart, of New York, in March, this year, procured a census of the cellar population of that city, and found that 18,456 persons lived in 8,141 rooms, in 3,741 separate basements. This is about 1 in 25, or 4 per cent. of

the whole population of the city.[1] The proportion of such inhabitants is believed to be nearly as great in Boston. In Lowell, and other places in the State, the same evil also exists. We are pleased that the present legislature, on the 21st of March, thought the subject of so much importance, as to pass the subjoined act. It gives all requisite legal authority to regulate the matter:—

"Whenever the Board of Health of any city or town shall be satisfied, upon due examination, that any cellar-room, tenement, or building, occupied as a dwelling-place within such city or town, is unfit for that purpose, and a cause of nuisance or sickness either to the occupants or to the public, such Board of Health may issue a notice in writing to such persons, or any of them, requiring them to remove from or quit such cellar-room, tenement, or building, within such time as the said Board of Health may deem reasonable. And if the person or persons so notified, or any of them, shall neglect or refuse so to remove and quit within the time mentioned, it shall be lawful for such Board of Health to remove them forcibly, and to close up such cellar-room, tenement, or building, and the same shall not be again occupied as a dwelling-place without the consent in writing of the Board of Health, under a penalty of not less than ten nor more than fifty dollars, to be recovered by indictment of the owner or owners, if they shall have knowingly permitted the same to be so occupied."[2]

[1] A detailed account of the results of this highly commendable effort of Dr. Stewart, is being published, while this sheet is passing through the press, in several interesting and valuable articles. See the New York Tribune, June 5th, 13th, 19th, and July 9th.

[2] We are under great obligations to Dr. William H. Duncan, Medical Officer of Health of Liverpool, for the valuable communications on the subject of this recommendation, which are inserted in the appendix. The Edinburgh Review for January, 1850, (p. 217,) in allusion to this matter, says:—"It may seem hard to deprive the wretch of the bulk-head or empty cellar, which he is content to make his idle home; but it is one of those hardships with which acts of mercy often must begin. When the frightful demoralization of Liverpool was recently exposed, and it was shown that between thirty and forty thousand inhabitants of that fine city lived in dens called cellars, the bold resolution was taken of at once *amputating* this morbid mass, by rendering cellars illegal habitations. The operation commenced in 1842; and after about 3000 people were ejected, a more stringent method was adopted in 1847. The operation of removal—under the judicious management of Dr. Duncan, the Medical Officer of Health—was gradual, but systematic and steady; and near the end of 1849, 4700 cellars had been cleared of 20,000 inhabitants! Time enough has not elapsed to let the full effect of this bold measure be seen; but the officer of health has already had to report the significant fact, respecting one of the districts formerly most afflicted by poverty and disease, that, while the last epidemic preceding the clearance carried off 500 inhabitants, the cholera, which broke out during the time that the forced change of residence was in progress, slew the comparatively small number of 94."

XXI. We recommend *that open spaces be reserved, in cities and villages, for public walks; that wide streets be laid out; and that both be ornamented with trees.*

Such an arrangement would have a good effect upon the beauty and social enjoyments of the place; but it would have a greater effect upon its general sanitary condition. Vegetation would absorb much of the carbonic acid gas which is produced in so great superabundance in populous places, and thus render the air more fit for respiration. Open spaces also would afford to the artizan and the poorer classes the advantages of fresh air and exercise, in their occasional hours of leisure.

XXII. We recommend *that special sanitary surveys of particular cities, towns, and localities, be made, from time to time, under the direction of the General Board of Health.*

It is of great importance that the exact sanitary condition of every town in the State should be ascertained, that any causes unfavorable to health may be removed or mitigated. Partial attempts have been repeatedly made, by individuals and associations for a general or special purpose, to accomplish this object. Very limited success has, however, attended their efforts. Experience, thus far, has led to the conclusion that no plan can be successful and useful, unless conducted by competent men under the sanction of legal authority.

In 1839 and 1841, Dr. John D. Fisher, late of Boston, issued circulars to obtain information relating to the causes and fatality of consumption. Answers to this important circular were received from thirty-one individuals only.

In 1835, a committee was appointed to investigate the history of intermittent fevers in Massachusetts and New England generally, and a circular was issued and extensively circulated; but two answers only were received. And in 1845, the Massachusetts Medical Society sent other circulars to the several towns in the State, but received a single answer only in return.

In 1830, the New York Medical Society issued a circular to the different county medical societies, soliciting information concerning the medical topography of that state. Replies relating to the following counties only have been received and

published:—Kings, in 1832; Saratoga, 1833 and 1848; Columbia, 1834; Madison, 1834; Onondaga, 1835 and 1849; Tompkins, 1836; Tioga, 1837; Binghampton, 1843; and Otsego, in 1848.[1]

The American Medical Association, in 1848–9, made the most successful effort of the kind ever attempted in this country. Answers to their circular were received, giving sanitary sketches of Portland, Me., by Dr. J. T. Gilman; of Concord, N. H., by Dr. Charles P. Gage; of Boston and Lowell, by Dr. J. Curtis; of New York, by Dr. John H. Griscom; of Philadelphia, by Dr. Isaac Parish; of Baltimore, by Dr. James Wynne; of Charleston, S. C., by Dr. P. C. Gaillard; of New Orleans, by Dr. Edward H. Barton; of Louisville, by Dr. L. P. Yandell; and of Cincinnati, by Dr. J. P. Harrison. These papers, including the report of the committee, were published in the Transactions of the American Medical Association, (Vol. II, pp. 431–649,) and also in a separate volume. They are a highly valuable contribution on the subject.

Such surveys are exceedingly valuable and important, and it is desirable that they should be made, for general and not partial purposes, under the direction of the general and local Boards of Health, of several towns each year, until the exact sanitary condition of every part of the State shall be, as far as possible, definitely known. The annual reports of the local Boards of Health might furnish such additional information as would exhibit the changes or improvements which occur from year to year.

The matters which we recommend for consideration in such surveys, the mode by which they are to be conducted, and the manner of presenting the results to the public, may be ascertained by a careful examination of this report; and, especially, these recommendations; the circular; the special reports of the sanitary surveys, which may be found in the appendix; the reports to which we refer in the list of books there recommended; and the circumstances which will suggest themselves to intelligent local Boards of Health.

[1] Transactions of the New York Medical Society, Vol. I, pp. 30, 36, 174, 342, app. 41; Vol. II, p. 228; Vol. III, pp. 25, 151; Vol. V, p. 294; Vol. VII, pp. 61, 96, 131.

XXIII. We recommend *that local Boards of Health, and other persons interested, endeavor to ascertain, by exact observation, the effect of mill-ponds, and other collections or streams of water, and of their rise and fall, upon the health of the neighboring inhabitants.*

We have seen (pp. 73–76) that the question involved in this recommendation has had an historical interest; though it seems of late to be almost entirely forgotten. The streams at the waterfalls, in all parts of the Commonwealth, are obstructed in their courses for manufacturing purposes; and if cases of fever or other disease occur in the neighborhood, the people have generally attributed them to some uncontrollable agency; while possibly, perhaps, they may arise from causes which their own hands have created, and which are capable of removal. It is then a question of permanent interest and importance. If mill-ponds, or stagnant waters of any kind, or places where they have existed, produce disease under certain conditions, it should be known, and certain other conditions should be provided, under which they may be permitted without injury, and without which they should not be permitted at all. Theory, vague suggestion, presumptive assertion, cannot decide the question. It can be fully done only by an extensive series of exact observations, through several years, concerning the nature of the diseases, the external circumstances under which they occur, and the condition of the water, and of the places where water has been, in the neighborhood, truthfully made, uninfluenced by party or pecuniary interests, for no other purpose than to obtain the truth. The plan of observation stated in our XVIth recommendation might be adopted. And are not some hundreds of lives, supposed to be annually lost in this State for want of this information, worth our while to obtain it?

XXIV. We recommend *that the local Boards of Health provide for periodical house-to-house visitation, for the prevention of epidemic diseases, and for other sanitary purposes.*

The approach of many epidemic diseases is often foreshadowed by some derangement in the general health; and, if properly attended to at that time, the fatal effects may be prevented. This is especially proper in regard to cholera and

dysentery. The premonitory symptoms of cholera are seldom absent; and if these are seasonably observed and properly treated, the disease is controllable. There are few diseases over which curative measures have less, and few over which preventive measures have greater power. This well-known characteristic of the disease led persons in many places in England, during last year, to organize a system of house-to-house visitation, by which every family, sick or well, in a given district, was visited daily by some authorized person, whether invited or not; and every inmate who had the least symptom of the disease received advice and treatment. The objects aimed at were—

"1. The discovery and immediate treatment of every case of diarrhœa, in localities where cholera prevailed, and where the patients had not applied at the dispensaries, in order to prevent, as far as possible, the development of the disease.

"2. To prevent persons who might not apply for medical aid, even in cholera, from dying without such aid.

"3. To bring cases of cholera under treatment, at the earliest possible period of the disease.

"4. To keep a constant medical inspection over affected districts and houses, so as to insure their being kept in a proper sanitary condition.

"5. To exercise a moral agency over the population, by giving such instructions in regard to cleanliness, ventilation, and personal habits, as might appear needful, and by explaining and enforcing the necessity for immediate application to the dispensaries, or medical officers, by all parties who might be taken ill during the intervals between the daily visits."

This measure was attended with eminent success, and was found to be one of the greatest economy as well as humanity. We select the following statement of its effects in one district, as an illustration of what occurred in many others :—

"In Sheffield, an effective body of medical officers have been appointed for the discovery of persons laboring under the premonitory symptoms of cholera, and for bringing such persons under immediate medical treatment. Besides an adequate staff of house-to-house visitors, numerous dispensaries have been

opened in convenient parts of the town, for supplying all such persons gratuitously with proper medicine. Handbills have been extensively distributed, particularly among the most susceptible part of the population, giving them the necessary information respecting these dispensaries, and warning them of the danger of neglecting any degree of bowel complaint. Every person, on making application to a dispensary for a dose of medicine, on receiving the medicine, is required to give his name and address; this is forwarded at once to a medical officer, who visits the patient without delay. So thoroughly have the people in Sheffield had their attention directed to the symptoms which precede cholera, and so well do they understand and appreciate the information which has been given them, that it is stated that the house-to-house visitors scarcely ever meet with a case of diarrhœa which has not been attended by a medical man in consequence of their having previously applied at one of the dispensaries for a gratuitous dose of medicine. During the first week that this system of visitation has been in practice, the visitors discovered 1582 cases of premonitory diarrhœa, and on the second week, 1387; in all, in one fortnight, 2969. Out of this great number, only four deaths have occurred; but in parts of the town not under visitation, among the wealthier classes, attended by their own private medical friends, there have occurred seven deaths. In a rural district connected with Sheffield,—namely, Altercliffe,—not during this period under visitation, with 279 cases of diarrhœa, there were 23 cases of cholera, and 11 deaths. No stronger evidence can well be conceived of the efficiency of that preventive measure which is founded on the fact, which experience has too fully proved, that persons in general laboring under premonitory symptoms are not aware of their danger, and that, if those persons are to be saved, they must be sought out in their dwellings, and placed at once under proper treatment."

The success which attended the measure in particular localities, led the Board of Health to issue, on the 1st of September, 1849, a general order for its introduction into London, and the result for the first 52 days, up to October 22, was as follows:—

Diarrhœa cases discovered,	43,127
Rice water purging discovered,	976
Cholera discovered,	779
Passed into cholera after treatment,	52

Had it not been for these visitations, very many more of these cases would have terminated in cholera and death. What facts can more forcibly illustrate the utility of preventive measures? We earnestly commend the plan to every city and village in which cholera, dysentery, and other similar diseases, may appear as epidemics. The expenses which would attend its execution would be far less than result from the effects of the disease, when suffered to take its ordinary course under ordinary treatment. Small-pox, too, might in this manner be easily exterminated from any city.[1]

XXV. We recommend *that measures be taken to ascertain the amount of sickness suffered in different localities; and among persons of different classes, professions, and occupations.*

Every person is liable to sickness. The extent of that liability, however, varies in different places and circumstances, and in the same place and circumstances in different ages and seasons. It has some, though not an exact, relation to mortal-

[1] Dr. Simon, the able Officer of Health for the city of London, issued, on the 21st of September, 1849, the following excellent instructions to the house-to-house visitors under his supervision, as to the manner in which they should perform their duties:—

"It will be his duty to visit every house in the district assigned to him by the ordinary medical officer of the locality, once each day, at the least; and, wherever several families inhabit one and the same house, it will be his duty at each visit to see one adult member at least, of every such family.

"These visits should be made as early as possible in the day, and the severer cases of indisposition should be revisited in the afternoon, (or as early and as often as may be necessary,) in order to ascertain the result of the treatment adopted.

"The medical duties of the visitor are restricted to the treatment of diarrhœa and other premonitory symptoms; so soon as any case shall have passed or shall appear to be on the point of passing into cholera, it shall be the visitor's duty immediately to transfer the case to the ordinary medical officer, and to take care that the latter officer be apprised thereof without delay.

"The visitor shall be provided with medicines suitable to any emergency likely to fall within his observation; but in cases of no urgency he shall prescribe, and shall refer the patient to the depot of his district, where medicine may be procured.

"The visitor shall take notes of the particulars specified in the tabular form with which he will be furnished, and at the close of each day's visitation he shall communicate this return to the ordinary medical officer with whom he acts, and shall receive that officer's directions for the next day's visitation.

"The visitor shall insert in his return a notice of every locality where cleansing (either external or internal) shall appear requisite; and wherever he shall find the condition of a house irremediably bad, or the inhabitants so densely crowded as to endanger life, he shall make this the subject of a special report.

"Especially he should impress on the persons with whom he communicates, the extreme danger of neglecting diarrhœa, and the necessity of obtaining medical advice as speedily as possible.

"He should likewise explain to them the arrangements for medical relief which prevail in the district, and should see that they know the residence of the ordinary medical officer; so

ity. Some diseases under some circumstances produce more sickness in proportion to the mortality than others. It has been supposed by Mr. Edmonds, an author entitled to credit, (Lancet, Vol. II, for 1839, p. 185,) that the average relation existing between the rate of sickness and the rate of mortality is two years of sickness to each death. "If ailments of a lighter kind are included, the proportion of sickness rises to $2\frac{1}{2}$ years to each death. Assuming two years to be the proportion of sickness to each death at every age, it will follow that the proportion of the living constantly sick at any age will always be double the proportion of the population of the same age dying in one year. If the deaths at any age are at the rate of 2 per cent., or 1 in 50 per annum, the proportion of the living constantly sick will be 4 per cent., or 1 in 25."

There are several reasons why this subject should be fully and carefully investigated, and that exact facts in relation to different populations, existing under different circumstances,

that, in case of any sudden seizure in the intervals of his own visitation, there may be no ignorance of the best course for procuring medical assistance.

"All persons suffering with bowel complaint, however slight, or with sickness or other unusual ailment, are earnestly requested to procure immediate assistance, either from their ordinary medical advisers, or from the medical officer of the district, whose surgery will be open day and night, for dispensing all necessary medicines."

The tabular forms alluded to are to contain the following particulars :—

Particulars of Household Visitation in the parish of ———. *Medical Officer, Mr.* ———; *Visitor, Mr.* ———.

Street.	Number.	Floor.	Sex.	Age.	Symptoms requiring treatment.	Passed into cholera since last report.	Remarks on locality.	Deaths.

Summary of Household Visitation in the City.

Union.	District.	Ordinary Medical Officer.	Visitors.	Total families visited since last report.	New cases of persons requiring medical treatment.	Total of cases now under visitors' treatment.	Cases terminated in cholera since last report.

should be known. We shall allude to two principal ones only:—

1. *It would subserve a pecuniary purpose.* The wealth of a country consists in its capacity for labor. That people who enjoy the greatest vital force,—the highest degree of health,—and apply it most skilfully to the production of wealth, are the most wealthy. It is their capital, their means of subsistence. Persons who sustain a low vitality only, generally have little skill to apply what they possess, contribute little or nothing to the general welfare, and may, and often actually do, become a public burden. This is one view. Another presents itself in the vast number of associations existing, under the names of Friendly Societies, Health Insurance Companies, Odd Fellows, and other titles, the object of which is, directly or indirectly, by the payment of a certain sum, to secure support to the members during the contingency of sickness. For the stability of these societies, and the security of the members themselves, it is necessary that the rate of sickness under different circumstances should be definitely ascertained. So long as it is not known, no just rates of payment can be established. Some of the Health Insurance Companies in this State have closed their business, because they have had to pay out more than they received. Some lodges of Odd Fellows have also been obliged to curtail their payments. All these institutions are now groping in the dark in regard to these matters, and many of them, it is believed, cannot exist under the rates of payment proposed to be made. A misapprehension of the principles on which they should have been founded and managed, is a principal cause of their failure. Health insurance might be so managed as to be a legitimate business, of a useful character.

2. *It would subserve a sanitary purpose*, and show the exact condition of the people. Some interesting facts on this subject are already known. The Manchester Statistical Society have given the average number of days of sickness annually suffered by each of the operatives engaged in various branches of industry, from which it appears that, in the Staffordshire potteries, under the age of 60, it is 9.03 days; in the silk mills, 7.08 days; in the woolen mills, 7.08 days; in the

flax mills, 5.09 days; in the cotton mills at Glasgow, 5.06 days; among the East India Company servants, 5.04 days; among laborers in the dock-yards, 5.38 days; in the Lancashire cotton mills, 5.35 days; and for those under 16, 3.14 days.

From M'Culloch's Statistics[1] we compile the following table, to show the average number of days of sickness per annum, at different ages, suffered by each operative employed in the factories in Lancashire and Glasgow:—

Ages.	Days of sickness per annum to every person employed.				Days of sickness per annum to every person sick.			
	Lancashire.		Glasgow.		Lancashire.		Glasgow.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Under 10, -	2.46	8.03	1.01	2.63	13.04	-	3.61	14.90
10 to 15, -	3.81	4.25	4.80	6.18	14.58	11.98	12.35	13.81
15 to 20, -	4.42	5.56	5.52	6.38	16.43	12.63	17.14	15.54
20 to 25, -	4.91	6.85	9.11	8.16	18.27	16.42	20.12	18.96
25 to 30, -	6.88	8.62	7.05	7.38	22.14	18.51	16.05	19.81
30 to 35, -	3.85	9.29	7.65	6.05	12.19	21.77	16.93	13.05
35 to 40, -	4.13	6.16	8.50	4.16	13.75	19.19	22.58	16.00
40 to 45, -	5.09	14.67	5.12	11.94	14.25	14.41	16.41	20.36
45 to 50, -	7.18	20.34	4.84	11.72	30.31	26.43	20.57	40.60
50 to 55, -	3.47	15.75	4.90	16.50	13.10	21.00	16.41	25.85
55 to 60, -	12.68	15.75	3.27	15.00	11.50	21.00	8.84	30.20

From this table it appears that, at the ages 15 to 20, every male operative in Lancashire sustains, on the average, 4.42 days of sickness annually, and every female, 5.56; in Glasgow, the males 5.52 days, and females, 6.38 days; and that the average length of sick time that every male who is sick will be, in Lancashire, 16.43 days, and every female, 12.63 days; and in Glasgow, the males, 17.14 days, and the females, 15.54 days. An inspection of the table will show a difference in the amount of sickness in the two places, in other ages.

The most reliable works which exhibit the probable annual sickness which a laboring man will sustain through life, are,— 1. A Report of the Highland Society, by Charles Oliphant, Esq. This able work was published in 1824, and was the first publication of the kind. It was prepared from returns of 79 Friendly Societies, in 16 counties of Scotland, made from

[1] See the valuable article on Vital Statistics, Vol. II, pp. 521–590; 2d edition, 1839: written by William Farr, Esq., now Superintendent of Abstracts in the Registrar-General's office.

records kept between 1750 and 1821, and related to 104,218 members.—2. A Treatise on Friendly Societies, by Charles Ansell, Esq., Actuary to the Atlas Assurance Company; published in 1835, under the superintendence of the Society for the Diffusion of Useful Knowledge. This work was drawn up from returns of Friendly Societies in most of the counties of England, and related to 24,323 members, during five years, 1823 to 1827 inclusive.—And 3. Contributions to Vital Statistics, by F. G. P. Neison, Esq., Actuary to the Medical Invalid and General Life Office, published in 1846. This work was prepared from the returns of the Friendly Societies in England and Scotland, relating to the five years, 1836 to 1840.

From these works we have compiled the following table, to show the number of days of sickness which each person, on the average, sustains annually, at each age, from 20 to 70 years:—

Age.	Oliphant.	Ansell.	Neison.	Age.	Oliphant.	Ansell.	Neison.
21	4.025	5.460	5.917	46	7.224	9.877	10.981
22	4.032	5.495	5.960	47	7.756	10.325	11.569
23	4.046	5.537	6.009	48	8.302	10.808	12.222
24	4.067	5.586	6.062	49	8.904	11.333	12.940
25	4.095	5.642	6.120	50	9.527	11.907	13.722
26	4.130	5.705	6.183	51	10.057	12.537	14.568
27	4.172	5.775	6.240	52	10.787	13.230	15.512
28	4.221	5.852	6.291	53	11.431	13.993	16.555
29	4.227	5.936	6.336	54	12.082	14.840	17.695
30	4.347	6.027	6.374	55	12.747	15.792	18.932
31	4.417	6.132	6.407	56	13.426	16.870	20.269
32	4.487	6.251	6.475	57	14.126	18.102	21.959
33	4.564	6.384	6.577	58	14.854	19.516	24.005
34	4.641	6.531	6.713	59	15.610	21.147	26.405
35	4.725	6.692	6.885	60	16.422	23.044	29.159
36	4.816	6.867	7.091	61	17.500	25.277	32.269
37	4.914	7.063	7.331	62	19.152	27.937	36.332
38	5.026	7.280	7.608	63	21.700	31.136	41.351
39	5.159	7.518	7.919	64	25.900	35.007	47.323
40	5.306	7.777	8.265	65	30.800	39.704	54.250
41	5.488	8.057	8.647	66	37.800	45.402	62.132
42	5.698	8.365	9.057	67	46.200	52.297	70.475
43	5.964	8.701	9.495	68	55.300	60.613	79.279
44	6.314	9.065	9.962	69	65.100	70.602	88.545
45	6.734	9.457	10.457	70	74.907	82.551	98.273

It appears from this table that the average number of days' sickness per annum, which each person in these societies suf-

fered at the age of 21, was, according to Oliphant, 4.025 days; according to Ansell, 5.460 days; and according to Neison, 5.917 days. At the age of 60 it is, respectively, 16.422, 22.044, and 29.159. There is considerable discrepancy in these results, probably arising from the different methods of observation, or the different circumstances of the persons observed, or from an increase of sickness in the latter over the former periods, as we have before intimated, (pp. 103–106.)

We also compile from the deductions in Mr. Neison's work, (p. 105,) the following table, to present other views of the relations of sickness:—

Ages.	The number of attacks of sickness annually in each 100 members, will be,	Days of sickness which each member who is sick will suffer annually,	To each 100 members who are sick, the proportion of deaths per annum will be,	To each annual death the proportion of annual sick time, among the living, will be,
10 to 15,	21.9565	28.8617	.9901	416.4290 wks. or 8 yrs. 3 dys.
15 to 20,	22.0743	25.1209	2.8571	125.6032 " = 2 " 151 "
20 to 25,	22.0386	26.9626	3.0539	126.1271 " = 2 " 154 "
25 to 30,	21.6997	29.3447	3.3271	125.9977 " = 2 " 154 "
30 to 35,	21.0147	30.5095	3.7592	115.9411 " = 2 " 83 "
35 to 40,	21.5471	34.6241	4.0686	121.5732 " = 2 " 122 "
40 to 45,	22.9858	41.5926	4.5306	131.1468 " = 2 " 190 "
45 to 50,	24.6042	47.9892	5.1657	132.7123 " = 2 " 200 "
50 to 55,	27.6422	59.5728	6.2401	136.3839 " = 2 " 226 "
55 to 60,	30.2424	76.4827	7.2732	150.2235 " = 2 " 323 "
60 to 65,	35.5676	106.3825	8.6163	176.3808 " = 3 " 142 "
65 to 70,	46.8493	169.5519	9.6004	252.2988 " = 4 " 310 "
70 to 75,	58.3750	228.3925	12.1306	268.9679 " = 5 " 62 "
75 to 80,	73.5916	253.6579	11.3636	318.8876 " = 6 " 68 "
80 to 85,	74.4624	264.3431	18.4116	205.1064 " = 3 " 343 "
85 to 90,	79.4872	287.5803	17.2043	238.7943 " = 4 " 215 "

By this table it appears that, on the average, at the age of 45 to 50, in each 100 members, 24.6 (omitting other fractions) attacks of sickness will take place, or that number of members will be sick every year; that the length of the sickness of each one who is sick will be 47.9 days; that in every 100 who are sick, 5.1 will die; and that the length of sick time which will be suffered by all will be 132.7 weeks, or 2 years, 200 days. It also appears, from the age of 15 upwards, the amount of sickness will be found to increase in regular and uninterrupted series. While 26.96 days of sickness are suffered in a year by

each person sick, at the period from 20 to 25, 169.55 days are suffered at the period 65 to 70. The relative chances, also, of being sick at the two periods of life, 20 to 25, and 65 to 70, are in the ratio of 22 to 46; while the mortality at the same period is in the ratio of 3 to 9 among those actually sick. At the period of 30 to 35, for every 2 years and 83 days' sickness there is one death; at 10 to 15, 8 years and 3 days; and at 65 to 70, 4 years and 310 days: or, in other words, a greater amount of sickness in proportion to the deaths is suffered in youth and old age, or at those periods of life in which the least vital force exists, than in the middle ages, when a greater degree of vitality is enjoyed.

These are some of the interesting results of the investigations made in England and Scotland, relating to sickness. How far they are applicable to this country we have not the means of knowing accurately. Some have supposed that the proportion of sickness to health is greater in Massachusetts than in England, but others are of a different opinion. The observations already made are too limited and imperfect to found thereon any correct opinion.[1] If the rule of doubling the annual mor-

[1] For some estimates on this subject, see Shattuck's Census and Statistics of Boston, pp. 173–176. Dr. Jarvis (Communications, Mass. Medical Society, Vol. VIII, p. 50) says:— "There are no data to determine the amount of sickness in New England. Some of the Health Insurance Companies here made up their rates of premiums according to those of the English Benefit Societies, but these have been found, on trial, too low. Probably there is more sickness here than in England, and some of these companies have been paying out in 'benefits' more than they received in premiums. The Boston Journal of 30th July, 1849, says—'Yesterday the last of the four companies remaining in operation, chartered in 1847,—viz., the Massachusetts Health Insurance Company,—voted to discontinue farther business, and close up its affairs. The Lowell and Worcester institutions decided on this course about a year ago. During the last six months, the Essex Company has been winding up, and paying from 20 to 30 cents on a dollar.'

"The Siloam Lodge of Odd Fellows, in Boston, found the same result and difficulty, and lately voted not to pay for the first week of any case of sickness, but for all afterwards, and charge the same premiums as before. The average number of the members of the Siloam Lodge, for the years 1844, '45, '46, and '47, was 549. The average time of sickness of all, in each year, for which 'benefit money' was paid, was 465¼ weeks. Average sickness, for each member drawing 'benefit money,' was 5.9 days in each year."

Dr. Lyman has furnished us with the following abstract of the records of the Massachusetts Health Insurance Company, relating to those policies only which had expired:—

Ages.	Insured.	Sick.	Average.	Weeks Sick.	Average.
16 to 30	533	122	4.36	539	4.4
30 to 35	130	39	3.3	161	4.12
35 to 40	59	19	3.1	108	5.68
40 to 45	26	3	8.66	25	8.33
45 to 50	13	5	2.6	17	3.04
16 to 50	761	188	4.04	850	4.05

According to this statement, 188 of 761, or 24.70 per cent. of the members insured were sick; and the length of sick time was 31.7 days to each.

tality per cent. be applied to obtain the rate of sickness, it will appear that 5.06 per cent. of the population, or 5,787 persons of both sexes, have on the average been constantly sick, in Boston, for the last nine years. By the same rule, in a country town of an average healthy standard, containing 2,000 inhabitants, 60 will constantly be sick. This seems a large proportion or amount of sickness, but it may nevertheless be true, where those in infancy and old age are included.

This subject is of vast consequence. It would be extremely interesting and useful to know the amount of sickness in the families, and among persons of the various professions and occupations,—the farmers, the mechanics, the manufacturers, and others,—and how far it differs in different places and under different circumstances. All the facts and arguments generally used in favor of a sanitary survey, may be applied to show the utility and importance of this branch of the subject. To obtain the facts, some simple plan is needed, which may easily and without much labor be carried into operation; and such a plan we have given in the appendix.

XXVI. We recommend *that measures be taken to ascertain the amount of sickness suffered, among the scholars who attend the public schools and other seminaries of learning in the Commonwealth.*

It has recently been recommended that the science of physiology be taught in the public schools; and the recommendation should be universally approved and carried into effect as soon as persons can be found capable of teaching it.[1] Sanitary science is intimately connected with physiology, and deserves equal and even greater commendation as a branch of education. Every child should be taught, early in life, that, to preserve his own life and his own health and the lives and health of others, is one of his most important and constantly abiding *duties*. By obeying certain laws, or performing certain

[1] The following are the provisions of an act relating to public hygiene, passed April 24, 1850:

Sect. 1. Physiology and hygiene shall hereafter be taught in all the public schools of this Commonwealth, in all cases in which the school committee shall deem it expedient.

Sect. 2. All school teachers shall hereafter be examined in their knowledge of the elementary principles of physiology and hygiene, and their ability to give instructions in the same.

Sect. 3. This act shall take effect on and after the first day of October, one thousand eight hundred fifty-one.

acts, his life and health may be preserved; by disobedience, or performing certain other acts, they will both be destroyed. By knowing and avoiding the causes of disease, disease itself will be avoided, and he may enjoy health and live; by ignorance of these causes and exposure to them, he may contract disease, ruin his health, and die. Every thing connected with wealth, happiness and long life depend upon *health;* and even the great duties of morals and religion are performed more acceptably in a healthy than in a sickly condition.

This matter has been too little regarded in the education of the young. Intellectual culture has received too much and physical training too little attention. Some measure is needed which shall impel children to make a sanitary examination of themselves and their associates, and thus elicit a practical application of the lessons of sanitary science in the every-day duties of life. The recommendation now under consideration is designed to furnish this measure. It is to be carried into operation in the use of a blank schedule, which is to be printed on a letter sheet, in the form prescribed in the appendix, and furnished to the teacher of each school. He is to appoint a sanitary committee of the scholars, at the commencement of the school, and, on the first day of each month, to fill it out, under his superintendence, according to the accompanying directions. Such a measure is simple, would take but a few minutes each day, and cannot operate otherwise than usefully upon the children, in forming habits of exact observation, and in making a personal application of the laws of health and life to themselves. This is education of an eminently practical character, and of the highest importance. All the reasons in favor of our twenty-fifth recommendation apply also to this. By adopting it, many and many a life would annually be saved in this Commonwealth, and the general health of the rising generation would be greatly improved.

XXVII. We RECOMMEND *that every city and town in the State be* REQUIRED *to provide means for the periodical vaccination of the inhabitants.*

The small-pox is a terrific disease; but it is almost entirely

shorn of its terrors by the preventive remedy of vaccination. If a person is not vaccinated, there is more than two chances to one, that, if exposed, he will take the disease; but, if properly vaccinated, there is scarcely one chance in five hundred. Hence the importance of this preventive measure, and the guilt of neglecting it.

Dr. Waterhouse, of Cambridge, vaccinated his son in July, 1800; and this was the first person ever vaccinated in America. In 1810, an act was passed in this State, providing "that it *shall* be the duty of every town to choose persons to superintend the inoculation of the inhabitants with the cow-pox." This law was repealed in 1836; and the Revised Statutes provide "that each town *may* make provision for the inoculation of the inhabitants." This substitution of the word *may* for *shall* left it optional with towns to do or not to do it; and it has probably caused the loss of many lives. Under the operation of the old law many towns were accustomed, once in five or more years, to have a general vaccination of the inhabitants; but this custom, as far as our knowledge extends, has been generally discontinued, and the inhabitants have thus been left liable to the disease from every new exposure. Boston has provided that no child shall be admitted into the public schools without a certificate from some physician that it has been vaccinated. It has also provided for the gratuitous vaccination of the poor who may choose to go to the office of the city physician for that purpose. These excellent regulations should be adopted in every place. And local Boards of Health should be required to provide for a general vaccination of the inhabitants at least as often as once in five years.

Since the repeal, in 1837, of the salutary laws of the State relating to small-pox, no more restraint has been laid upon persons sick with this than with any other disease, and it has consequently seldom been absent from the large cities. During more than 30 years, prior to 1837, the disease caused the death, in Boston, of 37 persons only; and most of these were at Rainsford's Island. It seldom occurred in the city proper. During the 12 years ending December 31, 1849, since the repeal, it caused the death of 533 persons! and in the first six

months of 1850, *one hundred and forty-six* have died! These were unnecessary deaths,—*they might and ought to have been prevented!* and so should the thousands of cases of sickness by the same disease which did not terminate fatally. The plan of house-to-house visitation, described in our twenty-fourth recommendation, might have been adopted. The city might have been divided into small districts, to each of which a physician might have been assigned, who should have been required to visit every family, whether invited or not, and to vaccinate, or to revaccinate, every person, if necessary or expedient. By this plan the disease would soon have been deprived of subjects to feed upon, and must have been starved out. It might thus have been expelled from the city in less than one month; and the lives of more than one hundred persons which now have been lost, in less than six months might have been saved. The public expense, too, of such a measure would have been far less than that of the small-pox widows, and the small-pox orphans which have been thrown upon the city for support, to say nothing of other expenses; and the various other marked effects and calamities of the disease, suffered more privately, might have been avoided.

Under existing circumstances, it becomes the special duty of every person to protect himself against this disease. Any one who permits himself to be sick with it, is as justly chargeable with ignorance, negligence or guilt, as he who leaves his house open to be entered and pillaged by robbers, known to be in the neighborhood. And upon that state, city, or town, which does not interpose its legal authority to exterminate the disease, should rest the responsibility, as must rest the consequences, of permitting the destruction of the lives and the health of its citizens.

XXVIII. We recommend *that the causes of consumption, and the circumstances under which it occurs, be made the subject of particular observation and investigation.*

We have given some facts, (pp. 94–99,) to illustrate the operation of consumption, and stated that if that disease is ever to be eradicated or ameliorated, it can only be done by preventive means and not by cure. Dr. Fisher, late of Boston,

in the circular to which we have alluded, (page 166,) states, that "the disease, when once excited and seated in the system, is necessarily fatal. No remedial agent has ever yet been, and probably never will be, discovered, which will cure the malady when once developed in the lungs. It becomes, therefore, the duty of those who are aware of this fact and of the mortality which consumption occasions, to ascertain the causes of the disease, and to inform the public how these causes may be avoided. If the mortality produced by this disease is ever to be lessened, it is to be effected by preventive means. These means, when known and fully appreciated by the community, will be adopted, to a greater or less extent, and by their adoption a vast amount of human suffering and human life will be saved." This is the opinion of an eminent professional man, who had made this disease the subject of particular investigation, and his views are entitled to the highest regard.

The *causes of this disease*, and the means of removal, are the great objects of investigation; and they can be accurately ascertained only by an extensive series of systematic, uniform and exact observations of the external circumstances,—atmospheric, local and personal,—occurring in each case. And we cannot too strongly impress upon local Boards of Health, upon the members of the medical profession, and upon all others interested, the importance of making a united and energetic effort to obtain such observations concerning every case which occurs in every part of the Commonwealth. Near 3,000 cases, in this State, annually terminate in death; and if they were properly observed, for a series of five, ten, or more years, it is impossible to anticipate the good results which might follow. Possibly,—and even *probably*,—discoveries might be made which would reduce the annual number of cases, certainly by hundreds, and perhaps by thousands. We shall hereafter suggest a form of a Register of Cases adapted to this object; and the great importance of the disease, and the confident hope that some discovery can be made which will materially abate its melancholy ravages, should arouse us all to action.

XXIX. We recommend *that nuisances endangering human life or health, be prevented, destroyed, or mitigated.*

Nuisances are divided, in law, into two principal classes:—1. Those which affect the community, or the public, denominated *public nuisances;* and 2. Those which affect the rights or injure the property of individuals, denominated *private nuisances.* Some nuisances have a disagreeable and some a pecuniary character only. Others, a vital or sanitary character. The last class, only, immediately concerns this recommendation.

A street, highway, or bridge, is common property, and any obstruction, pit-hole, or defect, which endangers the lives of travellers, is a nuisance. Horses, cattle, swine, or other animals, going at large in such street or highway, may also be a nuisance. Locomotive steam carriages, steamboats, or other vehicles, or stationary steam engines, may become so by the manner in which they are managed. The manufacture, storage, and use of gunpowder and fireworks may be a nuisance, if within the neighborhood of living beings, since they endanger life. Gas, camphine, and other burning fluids, are often destructive of life. These and all other nuisances of a sanitary character, which often occasion direct accidental injury or death, should be so regulated as not to become dangerous to health and life. Those who cause them are liable to prosecution and damages. There is another class of nuisances which are equally obnoxious. Every kind of trade or occupation,—any filth and other substance, which corrupts the atmosphere,—every kind of food or drink that is unwholesome, though it should not produce immediate death or disease, if it endangers the health or gradually injures it,—is a nuisance; and every man who causes a nuisance transcends his right, and renders himself liable to prosecution. Boards of Health should make such regulations, that no person should prevent any other person from the free enjoyment of life and health; and no artificial obstruction should be permitted, that may destroy or injure either.

XXX. We recommend *that measures be taken to prevent or mitigate the sanitary evils arising from the use of intoxicating drinks, and from haunts of dissipation.*

That intemperance is an enormous evil is universally acknowledged. That it is the cause of a vast amount of direct sanitary suffering,—of unnecessary sickness, and of unnecessary death,—to those who indulge in it; and of a still greater amount of indirect sanitary suffering and death to their associates, relatives, and dependents, is equally true. The evil consequences are so great, and so widely diffused, that they have long since arrested public attention. Good citizens, moral reformers, religious teachers, and other classes of philanthropists, have deplored the evil, and devised various measures for its removal. It still exists, however, and fills the cup of suffering, and provides a premature grave for many and many a person, who might otherwise have lived to become a blessing instead of a curse to humanity. It is unnecessary, however, here to discuss the subject. Through thousands of channels it is brought to public notice. These channels should be widened and deepened, and the number should be increased, until all shall feel their influence. Local Boards of Health, by a careful observation of the sanitary evils of intemperance, and the local and personal circumstances under which they occur, and by adopting and enforcing such salutary regulations as will remove or mitigate them, may confer an immeasurable benefit upon the people.

XXXI. We recommend *that the laws for taking inquests upon the view of dead bodies, now imposed upon coroners, be revised.*

In our judgment, every matter relating to life, to health, and to death, should, to some extent, come under the cognizance of Boards of Health. The cause of the death of every person who dies should be fully known to them; and in their offices records of inquests upon dead bodies should be preserved. These Boards, and especially the medical health officers, are presumed to be better informed than others in relation to such questions as present themselves in investigations of this kind; and hence they would be able to act more intelligently and correctly. It sometimes happens that inquests are held when there is no occasion for them, and unnecessary expenses are incurred. For the last nine years, this State has paid, for coroners' inquests,

$6,968 95; and, for the four last years, the average annual payments have been $1,030 33. This would be avoided, in part, if Boards of Health had some control over the subject, so far as to decide when inquests are necessary or expedient. We would suggest, either that some members of the local Boards of Health should be authorized and appointed to perform the duties now imposed upon coroners, in relation to holding inquests, or that the Boards should be consulted on the expediency of holding such inquests; and that, in all cases, a copy of the verdict of the jury should be returned to the Board.

XXXII. We recommend *that the authority now vested in justices of the peace, relating to insane and idiotic persons, not arrested or indicted for crime, be transferred to the local Boards of Health.*

By the present laws of the State, no insane or idiotic person, other than paupers, can be committed to any hospital or place of confinement, except on complaint, in writing, before two justices of the peace, or some police court. Paupers may be committed by the overseers of the poor. By these proceedings, this unfortunate class of persons appear on the records as criminals, while they are guilty of no crime, unless the possession of an unsound mind be considered one. A sanitary question, merely, is often the only one presented in such cases, and it has occurred to us that the local Boards of Health would be the proper tribunals before whom they should be brought, and by whom they should be disposed of. It may be supposed that such Boards will be better acquainted, generally, with the medical jurisprudence of insanity, than justices of the peace; and their decisions will be, more than those of criminal courts, in accordance with the spirit of humanity which has been extended to that class of persons.

XXXIII. We recommend *that the general management of cemeteries and other places of burial, and of the interment of the dead, be regulated by the local Boards of Health.*

The Revised Statutes provide that towns may grant money for burial-grounds, and that Boards of Health "shall make all regulations which they may judge necessary for the interment

of the dead, and respecting burying-grounds in their towns." This is all the legal authority that is necessary for the purposes of this recommendation. Boards of Health and the selectmen of towns have ever had the management of these matters in this State. There are few if any states or countries, where more excellent regulations relating to the burial-grounds and the interment of the dead exist, where the ceremony of burial is conducted with more propriety, and where greater respect is paid to the deceased. Yet in some particulars improvement might and ought to be made. The history and condition of burial-grounds, and the regulations for the interment of the dead, are intimately connected with public health, and should form a part of the sanitary regulations of every city and town. We can, in this connection, notice only some general matters, which the subject suggests.

There are two principal objects which should be kept in view in these regulations,—1. To pay proper respect to the dead; and 2. To protect the health of the living. To accomplish these objects, there are several matters to be considered.

1. Plans for obtaining a *place of burial.* Several have existed in this State. One plan permits a family to select a private place of burial on its own estate. This is adopted in some parts of this Commonwealth, especially in the western and southern counties, but we cannot but regard it as highly objectionable. In this country, estates do not descend to successive generations of the same family, as in Europe. In the vicissitudes and revolutions of American life, the owners of property, real as well as personal, often change; and there is no security that the remains of a person, if deposited on an estate he owned, will remain undisturbed by other owners who succeed him. The occupant has no guaranties from a public or responsible body that it shall be so. This single consideration, in our judgment, should induce every one to discontinue the custom, and even to remove the remains already so deposited to a more secure and quiet resting-place.

Another plan allows proprietors, under an act of incorporation, to sell lots, or places of burial, under such regulations as they choose to make. This is of recent date, and originated

at Mount Auburn. This model cemetery was consecrated as a burial-place of the dead, Sept. 21, 1831. Cemeteries were subsequently incorporated at New Bedford, April 12, 1837; at Worcester, Feb. 23, 1838; at Hingham, Feb. 28, 1839; at Braintree, Feb. 18, 1839; at Salem, Feb. 19, 1839; at Dudley, March 23, 1840; and at Lowell, Jan. 23, 1841. A general law, passed March 17, 1841, allows ten or more persons in any town to organize themselves into a corporation for these purposes; and, since that time, numerous companies and cemeteries have been established in different parts of the State. Some object to these companies, however, because they make the burial of the dead too much a matter of commercial speculation.

Another, and the more general plan, vests the ownership of all burial-grounds in the town, which grants to families and to individuals, sometimes gratuitously, and sometimes for a consideration, rights for family lots, for tombs, and for single graves. This plan has been in existence from the first settlement of the State; and we much prefer it to the others. Every town should have the exclusive control in these matters, for many reasons, which it is unnecessary now to mention. The city of Roxbury has set a noble example, in the establishment, in its corporate capacity, of the beautiful Forest Hills Cemetery.

The place of burial should be selected in a somewhat secluded, and not in the most conspicuous part of the town, and should be combined with such natural scenery as will tend to inspire those feelings of solemnity and decorum which properly belong to the "city of the dead." It should not be where it would ever be liable to be encroached upon for buildings, roads, or any other purpose; but where the tenants may remain forever undisturbed in their quiet resting-place. And it should be large enough to meet the wants of the probable future growth of the town which it is designed to accommodate. Parts of such a cemetery might be assigned to a particular religious denomination, and, if desired, specially consecrated for its use. It should *never be within a populous city or village.* Such a site is now generally regarded as dangerous to the health of the living;

though in this State we have not as yet experienced, to a great extent, the evils which have existed in London and other large cities in England, as the following statements will show :[1]—

"When the living body is exposed to putrid emanations in a highly concentrated state, the effects are immediate and deadly ; when more diluted they still taint the system, inducing a morbid condition, which renders it more prone to disease in general, but especially to all the forms of epidemic disease, and which further predisposes it to pass into a state verging upon if not actually that of putrefaction. The most recent examination of the grave-yards of the metropolis appears to us to show that they contain putrefying matter enough to communicate this putrefying process to those who are exposed to it. It is stated by Sir James Macgregor, that on one occasion in Spain, soon after 20,000 men had been put into the ground within the space of two or three months, the troops that remained exposed to the emanations of the soil, and that drank the water from the wells sunk in the neighborhood of the spot, were attacked by malignant fevers and by dysentery ; and that the fevers constantly put on the dysenteric character. In the metropolis, on spaces of ground not exceeding in all 218 acres, closely surrounded by the abodes of the living, crowded together in dense masses, upwards of 50,000 dead bodies are buried every year. In Bethnal Green burial-ground alone, consisting of an area of about two acres and a half, there have been interred, since its opening in the year 1746, upwards of 56,000 dead bodies. In Bunhill Fields burial-ground, City Road, consisting of an area of less than four acres, there have been interred, from April, 1713, to August, 1832, according to the registry, which, however, in the earlier years was very imperfectly kept, 107,416 dead bodies. But in St. Pancras church-yard, one-half of which has been used as a burial-place for at least six centuries, there have been deposited the remains of more than twenty generations ; and in this space of ground, which does not even now exceed four acres, and a large portion of which was considered as full to excess twenty years ago, there have been interred since that

[1] Chadwick's Report on Extramural Sepulture, pp. 9, 5, 50 ; Dr. Simon's Report, p. 24 ; Dr. Duncan's Communication in the Official Circular of the General Board of Health, No. 7, pp. 101, 102, 103.

period upwards of 26,000 bodies. Estimating the duration of a generation at 30 years, there must have been interred in the small space of 218 acres, in the last generation, a million and a half of dead bodies; and within the next 30 years, more than another million and a half of the dead,—that is, a large proportion of those who now people the metropolis,—will have to be crowded into those same church-yards, unless other and better provision for interment be made."

"The placing of the dead body in a grave, and covering it with a few feet of earth, does not prevent the gases generated by decomposition, together with the putrescent matters which they hold in suspension, from permeating the surrounding soil, and escaping into the air above and the water beneath. Under the pressure of only three-fourths of an inch of water, gas,—common coal-gas, for instance,—rapidly makes its way to the surface through a stratum of sand or gravel several feet in thickness; the soil appearing to oppose scarcely any resistance to its passage. The evolution of the gases of decomposition takes place with so much force, that they often expand and occasionally burst the leaden coffin in which the body is confined; and when, as in a common grave, they pass gradually and without restraint into the surrounding earth, they are only in part absorbed by the soil, and some of them are scarcely absorbed at all, but are diffused in every direction, though it would appear in the upward direction chiefly, thus directly polluting the air. Such, indeed, is the tendency of these gases to reach the surface, that it does not appear to be possible to prevent the occurrence. 'If,' says Mr. Leigh, a chemist at Manchester, who appears to have paid particular attention to this subject, 'bodies were interred eight or ten feet deep, in sandy or gravelly soils, I am convinced little would be gained by it; the gases would find a ready exit from almost any practicable depth;' while it is obvious that their occasional escape would be still more easy through the fissures which are so common in clayey soils. 'I have examined,' says Dr. Lyon Playfair, 'various church-yards and burial-grounds, for the purpose of ascertaining whether the layer of earth above the bodies is sufficient to absorb the putrid gases evolved. The slightest inspection

shows that they are not thoroughly absorbed by the soil lying over the bodies. I know several church-yards from which most fœtid smells are evolved; and gases with similar odor are emitted from the sides of sewers passing in the vicinity of church-yards, although they may be more than thirty feet from them. If these gases are thus evolved laterally, they must be equally emitted in an upward direction.' Some of these gases, as has been stated, are either not absorbed at all, or only very sparingly,—carbonic acid gas, for example; yet so abundant is its evolution, that, in old church-yards or near 'grave-pits,' the ground is absolutely saturated with it, so that, when a deep grave is dug, such an amount of it is rapidly collected, that the workmen cannot descend without danger. Dr. Reid states, as the result of his own observation, that on sinking a pit in the earth, near which a number of bodies were interred, the pit in a few hours became filled with such an amount of carbonic acid gas, arising from the decomposition of the neighboring bodies, that the workmen could not reënter it without danger; that lives have been lost by the incautious descent into such a pit, only a few hours after it has been opened; that a well of carbonic acid gas is thus formed, into which a constant stream of the same gas continues perpetually to filter from the adjacent earth; and that, in fact, the earth around these pits is loaded with carbonic acid gas, as other places are with water. Dr. Playfair estimates that the amount of the gases evolved annually from the decomposition of 1,117 corpses per acre, which is very far short of the number actually interred in the metropolitan grave-yards, is not less than 55,261 cubic feet; but as 52,000 interments take place annually in the metropolis, according to this ratio the amount of gases emitted is equal to 2,572,580 cubic feet, the whole of which, beyond what is absorbed by the soil, must pass into the water below or the atmosphere above."

"Whatever portion of these gases is not absorbed by the earth,—earth already surcharged with the accumulations of centuries,—and whatever part does not mix with and contaminate the water, must be emitted into the atmosphere, bearing with them, as we know, putrescent matters perceptible to sense.

That these emanations do act injuriously on the health of the people resident in the immediate neighborhood of the places from which they issue, appears to us, by the evidence that has been adduced, to be indubitably established. From the law of the diffusion of gases, they must be rapidly spread through the whole of the atmosphere that surrounds the metropolis; and though they thereby become diluted, and are thus rendered proportionally innocuous, yet that they do materially contribute to the contamination of the air breathed by two millions of the people, cannot, we think, admit of any reasonable doubt."

Dr. Simon says—"Intramural burial is an evil, no doubt, that varies in its intensity according to the numbers interred,—becoming appreciable in its effects on health only when several interments occur annually, or when ground is disturbed wherein much animal matter had previously been left to decay; but be the evil large or little in any particular case, evil undoubtedly it is in all, and an unmitigated evil.

"The atmosphere in which epidemic diseases most readily diffuse their poison and multiply their victims, is one in which organic matters are undergoing decomposition. Whence these may be derived signifies little. Whether the matter passing into decay be an accumulation of soaking straw and cabbage leaves in some miserable cellar, or the garbage of a slaughter-house, or an overflowing cess-pool, or dead dogs floated at high water into the mouth of a sewer, or stinking fish, or the remnants of human corpses undergoing their last chemical changes in consecrated earth, the previous history of the decomposed material is of no moment whatever. The pathologist knows no difference of operation between one decaying substance and another; so soon as he recognizes organic matter undergoing decomposition, so soon he recognizes the most fertile soil for the increase of epidemic diseases; and I may state with certainty, that there are many church-yards in the city of London where every spade full of soil turned up in burial sensibly adds to the amount of animal decomposition, which advances too often inevitably around us. I have therefore no hesitation in counting intramural interments as one of the influences prevailing against health, in the city of London; and I have no doubt

that it contributes considerably to swell our list of deaths from fever and the allied disorders."

Dr. Duncan says:—"There are 39 burial-grounds within the borough of Liverpool. The interments take place in graves, vaults, or pits. In 23 burial-grounds, graves only are used; in 7, graves and vaults only; in 4, graves and pits; in 2, graves, vaults, and pits; and in 1, pits only.

"The aggregate annual number of interments within the borough is, in ordinary years, from 10,000 to 11,000. Of this number, as nearly as can be estimated, about two-thirds take place in pits, and one-third in graves; the interments in vaults probably not exceeding 20 annually.

"The pits vary in depth from 18 to 30 feet, being from 7 to 12 feet long, and $3\frac{1}{2}$ to 9 feet wide. The number of bodies deposited in each pit varies from 30 to 120. In St. James's Cemetery, about six inches of earth are placed over the coffins after each day's interments; in the others, the coffins are covered with $2\frac{1}{2}$ feet of soil, which is removed previous to the next interments; but with this exception the pits remain open, or only covered with a frame-work of boards, until filled with coffins, —a period varying from ten days in the case of the smaller, to ten weeks in the case of the larger pits. Although the evils connected with the practice of intramural interment have been less severely felt in Liverpool than in the metropolis, where many of the grave-yards situated in densely peopled neighborhoods have been in use for centuries, there can be no doubt that, under any circumstances, the practice of burying within the precincts of towns, unless guarded by the strictest regulations, must be productive of injury to the health of the inhabitants.

"It has been estimated that an acre of ground is capable of affording decent interment to not more than 136 bodies yearly; but in the thirty-seven burial-grounds of Liverpool, taking one with another, the number of burials to an acre is fully double of that just stated. Were the calculation confined to the burial-grounds in most frequent use, the proportion would be greatly augmented.

"In some of these places it is almost impossible to dig a new

grave without disturbing bodies previously buried; and in some, the soil, when opened up, appears to consist chiefly of human remains in a state of decomposition. It cannot be doubted that grave-yards thus impregnated with decaying animal matter must contaminate the atmosphere in such a way as to injure the health, not so much by the production of sudden disease, which may be directly traced to its cause, as by a gradual process of deterioration, leading to the development of disease in a more slow but equally certain manner. It was the observation of the injury to health arising from the practice of intramural interment, which caused the legislature of France, as well as of the other warmer continental countries, upwards of eighty years ago, to declare "illegal" all interments in towns, and subsequently to deprive even the priests of the privilege which they had enjoyed of interment within their own churches.

"But the *grand* evil in the case of Liverpool, and that which calls most urgently for interference, is the practice of burying large numbers of bodies in open pits. It must be unnecessary to say anything as to the injurious nature of this practice, if it be considered that in the hot weather of summer more than 100 bodies are collected together in an open pit, in all stages of decomposition, some of them having lain there for upwards of two months! Only two feet of space are left between the pits, so that the moisture, saturated with the decomposed matter of an adjoining pit, not unfrequently percolates through the intervening rock or soil into one which is newly made. In no case does the soil covering the pit, when filled, exceed the legal minimum of 2½ feet."

2. There are two *modes of interment* practised in this State; one in graves, and the other in tombs. We much prefer the former. Dangerous gases often escape from tombs, when insecurely closed, or when often opened for new deposits. Besides these evils, there is no security that deposits in tombs will ever "return to the earth as they were," undisturbed. They are there exposed to removal and desecration, which sometimes take place. In Mount Auburn, very properly, tombs are not

now allowed. Graves alone are used. It is desirable, too, that in no grave should more than one body be placed.

The following statement gives the burial accommodations in Boston, and the number of interments in 1849. Deposits can be made only in tombs in the city proper; graves have not been allowed for many years :—

Places of Interment.		Tombs.	Interments in 1849.
Boston Proper.—Copp's Hill and Hull Street,		222	395
	Chapel Burial-Ground,	79	62
	Under Chapel Church,	21	
	Granary Burial-Ground,	203	92
	Under Park Street Church,	38	24
	Central Burial-Ground,	149	160
	Under St. Paul's Church,	64	23
	Under Christ Church,	34	39
	Under Trinity Church,	55	21
	South Burial-Ground,	248	663
	Total in City proper,	1113	1479
South Boston.—Hawes Place Burying-Ground,		7	131
	Union Burial-Place,	4	9
	Under St. Matthew's Church,	60	66
	Roman Catholic Burial-Ground,	2	190
	House of Industry,	6	295
	House of Correction,	3	20
East Boston.—East Boston Burial-Ground,		8	324
	Jews' Burial-Ground,		12
	Deer Island,		214
	Total interred in the City,	1203	2740

This includes 98 who died elsewhere, and were brought into the city for interment. The following interments of persons who died in the city took place elsewhere :—

Roman Catholic Burial-Ground at Cambridge,	1562	
" " " " at Charlestown,	305	
" " " " at Roxbury,	80	
Mount Auburn Cemetery, at Cambridge,	212	
Forest Hills Cemetery, at Roxbury,	14	
Various other places in Massachusetts,	364	
Removed to other states,	143	
Total removed from the city,	2680	
Total interments in 1849,		5420

Deaths in Boston during the year,	5079	
Still-born during the same time,	250	
Brought into the city for interment,	91	
		5420

The city poor were interred in the tombs in the South Burial-Ground until August 27, 1849; since then, at East Boston.

The common charges for a burial in Boston are as follows,—varying, however, according to the age and other circumstances in each case:—Rights in a public tomb, $6 00; pine coffin, $7 00; City Registrar's and the undertaker's fees, $6 00; total, $19 00. This is exclusive of carriages for mourners, or any extra expenses. Many, of course, incur a much heavier expenditure. A family lot at Mount Auburn, of 300 square feet, costs $100, besides laying out, grading, and ornaments; and the expense of a private burial there is about $15, besides carriages. The expenses in other cities, and in country towns, vary according to location and other circumstances.

3. "Wakes," which are sometimes held over the bodies of the dead, by the foreign population, should be prohibited as improper, and dangerous to the public health and to good morals. In cities and populous villages, public reception-houses should be provided, and placed under proper regulations, to which dead bodies might be removed, from families living in a single room, or from a public boarding or lodging house, or from other places, where it would be inconvenient or dangerous to the public health to permit them to remain. We extract from Mr. Chadwick's recent work (p. 102) the following passage, to show the effect of retaining bodies in such localities:—

"Of the condition in which the surviving members of a family are placed, who have only one living and sleeping room, when the calamity of death occurs, and of the deplorable consequences that often ensue, some conception may be formed from the following statements:—

"'There are some houses in my district,' says Mr. Leonard, the medical officer of the parish of St. Martin's-in-the-fields, 'that have from 45 to 69 persons, of all ages, under one roof; and in the event of death, the body often occupies the only bed, till they raise money to pay for a coffin, which is often

several days. The body is retained in the room beside the living, from five to twelve days. In one instance the corpse had been retained twelve days; I could not remain in the room two minutes, from the horrible stench. The coffin stood across the foot of the bed, within eight inches of it; this was a small room, not above ten feet by twelve feet square, a fire being always in it; it was, as in most cases of a like kind, the only room for sleeping, living, and cooking in. In another instance, a mother and her infant were brought, ill with fever, to her father's room, which was ten feet square, with a small window of four panes; the infant soon died; then the grandmother was taken ill, and in a few days she also died; the corpse of the grandmother lay beside her husband in the same bed; in the next place the husband was seized with fever, attended with violent delirium, and died; and subsequently two of his children, one within a week, and the other within ten days, fell victims to the disease; in short, five out of the six inmates of this room died. Found in another similar room the corpse of a young person who had died of fever; the father and mother were just taken ill of the same disease; the foot of the coffin was within ten inches of the father's head as he lay upon his pillow, himself in a fever; in a few days another child was seized with the same disease. Cites these cases merely as examples of the fatal consequences of the long retention of the body in these small and crowded rooms; they could be multiplied indefinitely; believes that the retention of the corpse in the room with the living is fraught with greater danger than even that produced by emanations from crowded grave-yards, because when a body is retained in a small, heated and ill-ventilated room, decomposition proceeds rapidly; the noxious gases evolved cannot escape; they accumulate, and become highly concentrated; and they often prove rapidly and extensively fatal to the living inmates.'

"Other witnesses state that the death of parents, leaving the children orphans and destitute, is a frequent occurrence under those circumstances; and that they have sometimes seen whole families swept away."

4. Local Boards of Health should appoint intelligent and

competent health officers, undertakers, and others, who should be required to ascertain the sanitary condition of every family in which a death has occurred; to give advice and assistance with reference to the funeral and other matters, as occasion may require; to direct and superintend the removal of the dead from single rooms, occupied as dwelling and as sleeping rooms by one or more families; to see that this removal is effected in a respectful manner, with all due attention to the wishes and feelings of the friends; to give the necessary instructions to the survivors for their own safety; to obviate, as far as may be practicable, the danger to be apprehended from the presence of the corpse, until it can be removed; to examine into the existence of any local causes calculated to promote the extension of disease, more especially if the death has been caused by any form of epidemic, endemic, or contagious disease, and without delay to take such measures as may be necessary or advisable for the removal of the evil; to verify the cause as well as the fact of the death, where there has been no medical attendant; to ascertain the cause of death from the medical attendant, where there has been one; to grant, when required, a certificate of the fact of death, whenever apprehension is entertained of premature interment; to see that due care is taken of the bodies in the houses of reception; to make arrangements with the friends of the deceased, and with the officers of the cemeteries, as to the time and the mode of the removal of the dead, for the preservation of regularity, quiet, and order; and to superintend and carry into effect any other regulations of the Board of Health.

5. Boards of Health should make an exact survey and plan of each burial-ground in their respective towns, on which should be drawn and numbered separately, each family or personal lot, each tomb, and each grave; and these numbers should be entered in a record-book, and against each the name of the individual or individuals interred therein. These records should, as far as practicable, contain the names and location of the tenants already there, as well as new ones. Undertakers should return the number of the lot, tomb, or grave, to be entered under "place of interment," in the records

of deaths. All these records should be carefully preserved, so that any person may be able to identify the exact spot where a friend or connection was deposited. The precise quantity of land, in acres or parts of acres, in each ground, should be entered on the plan.

XXXIV. We recommend *that measures be taken to preserve the lives and the health of passengers at sea, and of seamen engaged in the merchant service.*

Vessels at sea are the floating habitations of living beings; and in these, as in dwellings on the land, the air may be corrupted by over-crowding, filth, and other causes, and thus become a fruitful source of disease. "Of all known poisons," says Dr. Combe, "that produced by the concentrated effluvia from a crowd of human beings, confined within a small space, and neglectful of cleanliness, is one of the worst; and in ships where ventilation is not enforced,—especially if the passengers are dirty in their habits, and much kept below by bad weather,—it frequently operates with an intensity which no constitution can long resist." "The occurrence of a single case of fever on board a merchant-vessel, and much more the spreading of disease among a ship's crew or its passengers, is, *prima facie*, evidence of neglect,—neglect of removable causes of disease; causes which might be certainly obviated by simple and inexpensive means, and for the prevention of which, therefore, the well-being of large classes requires that securities should be provided. That such securities should be provided for the crews and passengers of ships, their peculiar situation when overtaken by sickness appears to render peculiarly necessary. They are restricted to a narrow space; they cannot shift their locality; they cannot alter, in any way, the sanitary condition of the vessel; and they are out of the direct reach of civil authority,—all which peculiarities seem to be special reasons, calling for general sanitary regulations."

"A foul ship is not only a centre of disease to those on board, but a source of disease to her neighborhood. From a variety of evidence it appears indisputable that, while the foul state of a ship's hold is the frequent cause of malignant fever to her crew, the air issuing from such a hold, and the cargo

taken from it, are capable of producing disease in the neighborhood of the wharf where the unloading takes place, and of affecting persons who come on board from the shore. Observations of this kind have led to the apprehension and belief that epidemic diseases may be introduced from one country into another in this manner; and, were this possible, the actual condition of ships in general would afford the most perfect nidus for the incubation and development of pestilential virus that human ingenuity could devise. That a foul ship should produce disease in those who go on board of her, or near her, is no more surprising than that a foul chamber should do so." [1]

Without attempting in this place to recommend a specific system of sanitary regulations for ships, we urge, in general terms, upon merchants, sea-faring men, and others interested, the great importance of the subject. Dryness, ventilation, and cleanliness, should be enforced in every department of the ship; foul and putrid cargoes should be avoided; and every means used, by proper diet and regimen, to preserve the health of the seamen and passengers. Sanitary improvement was early introduced on board ships, as we shall presently show; and a great number of human lives have consequently been saved. In no department of social economy can preventive measures have a greater influence. Boards of Health might do a good service to humanity, by issuing a simple and judicious code of sanitary regulations for ships.[2]

[1] Report of the General Board of Health on Quarantine, p. 108, 110.

[2] The Introduction to the Statistical Reports on the Health of the Navy, already referred to, (p. 37,) and the Reports of the General Board of Health of England on Quarantine, contain many very valuable suggestions on this subject, to which we refer those interested. We extract from the latter work (pp. 115–113) an account of one regulation, which has had great influence :—

"It is stated that when the system of transportation was first adopted, in some of the earlier voyages full one-half of those who embarked were lost; later, on the passage to New South Wales, as in the 'Hillsborough,' out of 306 who embarked, 100 were lost; and in another ship, the 'Atlas,' out of 175 embarked, 61 were lost. Yet there were no omissions palpable to common observation, or which could be distinctly proved as matter of crimination, to which responsibility might be attached. The shippers were no doubt honorable men, chargeable with no conscious designs against the lives of the human beings committed to their care, and with no unusual omissions; but their thoughts were directed by their interests exclusively to profits: they got as much freight as they could, and they saw no reason why convicts or emigrants should not put up with temporary inconveniences to make room for cargo.

"By a simple change, (based on the principle of self interest, the most uniform, general, and, when properly directed, really beneficent of all principles of action,) by the short alteration of the terms of the contract, so as to apply the motive where alone there was the effectual means of prevention, by engaging to pay only for those *landed* alive, instead of paying for all those *embarked*,—these extreme horrors were arrested, the generation of extensively mortal epidemics was in a short time prevented, and clean bills of health might have been

XXXV. We recommend *that the authority to make regulations for the quarantine of vessels be intrusted to the local Boards of Health.*

The seventeenth section of the proposed act contains all necessary authority for making quarantine regulations. Boards of Health in sea-port towns will be able to obtain all needful information regarding their duties, by consulting the works referred to in the appendix, and making such regulations as are adapted to their own peculiar circumstances. The extremely valuable Report of the General Board of Health of England on Quarantine, published last year, is particularly commended. Public opinion on this subject seems to have undergone a great change within a few years past.

XXXVI. We recommend *that measures be adopted for preventing or mitigating the sanitary evils arising from foreign emigration.*

This recommendation involves one of the most momentous, profound, and difficult social problems ever presented to us for

given to all the ships which before would have been entitled to none. From the Report of the Select Committee on Transportation, in the year 1812, it appears that in one subsequent period,—namely, from 1795 to 1801,—out of 3,833 convicts embarked, 385 died, being nearly one in ten. But since 1801, after the principle of responsibility began to be applied, out of 2398 embarked, only 52 have died, being 1 in 46. The improvement has continued up to the present time, when it amounts only to one and a half per cent., or even lower than the average mortality of such a class living on shore. The shippers themselves, without any legislative provisions, or any official supervision or regulations thereto, appointed medical officers, or surgeons, and put the whole of the convicts under their charge; the shippers attested their own sense of the propriety, sound policy, and efficiency of the principle, by voluntarily adopting it, and applying it to each ship-surgeon in charge, whose remuneration was made dependent on the number of passengers landed alive.

"The alteration, stimulated by the self-interest of the ship-surgeons or officers engaged in that service, led to highly important practical results as to the means of securing health and preventing disease. In the course of the sanitary inquiries which have served as the basis of legislation, a surgeon who had the charge of transport ships described the toils of his service during long voyages, his sleeplessness on stormy nights, his getting out of his hammock to see that the wearied sailors, whom he would not trust to themselves, took off their wet clothes and put on a proper change before they turned in; and he narrates how he was complimented on his sentiments of active benevolence, when he frankly owned that he was really only entitled to praise for vigilance to his own interests. Some benevolent and intelligent shipowner had taken care that the sailors as well as the passengers should be included in his contract for remuneration. He acknowledged it was that which kept his thoughts intent on the means of preserving their health, as well as saving his own trouble in merely treating illness when it occurred, which alone, in consequence of a vicious short-sightedness, is ordinarily considered the surgeon's sole duty, and not that of giving general advice or directions for the preservation of health.

"In cases of contracts on these terms for the transport of troops, where the officers in command had forgotten to provide surgeons for their care, the pecuniarily responsible shippers had not failed to provide them.

"The same principle of pecuniary responsibility has also been partially applied to the transport of pauper emigrants, with complete success, as far as the experiment has been made; affording a result which stands out in strong contrast with the horrible events on board vessels where this principle has not been applied.

"There is strong reason to believe, from recent experience, that the general adoption of this principle in its full extent would do more to meet the formidable difficulties of these emigration ships, than the best devised system of inspection in the absence of this principle."

solution. When carefully examined with its attendant circumstances, the view presented is startling and sickening. Every man in whose veins courses any puritan blood, as he looks back upon the events of the past, or forward to the hopes of the future, is appalled and astounded. Public attention has been frequently called to this most important matter. We desire again to present the subject, with a special view to its sanitary relations. And we earnestly hope that the few facts which we shall now give, even if they come in the shape of figures and statistics, will arrest notice and careful consideration. In making an application of these facts and statements, it should be recollected that they are made concerning classes. There are individuals who are highly worthy, and are not obnoxious to the general character of the whole class.

The Report on the Census and Statistics of Boston, for 1845, first gave the birth-place of the inhabitants, and stated that the foreigners and their children were then 37,289, or 32.61 per cent. of the whole population; and that there arrived in Boston, during the nine years previous, 50,000 alien passengers,—33,436 by water, and the remainder by land, increasing annually from 1,262, in 1838, to 8,550, in 1845.

From the facts we have since collected, it appears that 15,504 arrived by water, in 1846; 24,245, in 1847; 25,042, in 1848; and 34,873, in 1849, making 99,658; and that others arrived by land sufficient to make the whole number equal to 125,000 within the last four years.[1]

[1] "I have boarded," in 1849, says Mr. Monroe, Superintendent of Alien Passengers, "ten hundred and seventeen vessels, in which were brought the following numbers:

"Number of those who had been in the State before,		3,912
Number for which *bonds* have been taken,		2,598
Number for which head money has been received,		11,548
Number for which no security or tax has been received, as per decision of Supreme Court,		16,815
Total,		34,873

"The foregoing passengers were from the following ports, in such vessels as is hereunto annexed, viz.:

"In 32 English vessels from Liverpool,	4,037	
In 41 English vessels from Ireland,	4,341	
In 665 English vessels from the Provinces,	5,191	
		13,569
In 68 American vessels from Liverpool,	13,350	
In 9 American vessels from Ireland,	1,510	
In 69 American vessels from the Provinces,	4,662	
In 133 American vessels from all other ports,	1,782	
		21,304
		34,873

We estimate the increase of the population of Boston, during this period, at about 23,000; and that the whole of this increase was of foreigners. The American residents are believed to be no more numerous now than in 1845.[1]

Of 1,133 intentions of marriage entered by the City Registrar, in Boston, from July 12th, when the record commenced, to December 31, 1849, the foreigners were 621, or 55 per cent.; and the Americans only 45 per cent.! The actual marriages show a still greater proportion of foreigners.

Of 5,031 children born in Boston, in 1849, and returned to the Registrar's office, 3,149, or 62 per cent., were the children of foreigners, and 38 per cent. only, of Americans.

Boston has paid on the average, for the last four years, about $1,100,000 taxes; of this sum, $350,000 per annum is for the benefit of the public schools; and *half of that sum*, or $175,000, for the education of children of foreign parents, most of whom contribute little or nothing to the public expenses, in taxation or otherwise. And in many cases the admission of great numbers of these children excludes children of American parents.

The City Marshal of Boston estimated, in January, 1849, that there were 1,500 truant and vagabond children in the city, between the ages of 6 and 16 years, who, from neglect and bad habits, were unfit to enter the public schools; and of 1,066 whom he actually enumerated, 963, or 90.3 per cent., were foreigners, and 103, or 9.7 per cent., only, were Americans!

The Boston Society for the Prevention of Pauperism, in their office for providing employment for females, have received, during the last five years, applications for employment from 15,697 females, of whom 14,044, or 90 per cent., were foreigners, and 10 per cent. only were Americans. And at the

"The principal part of those arrived are Irish laborers, say three fourths, and the balance from all nations, of all professions and occupations.

"The condition of the passengers, so far as relates to their health, (notwithstanding the cholera has been among them to some extent,) has been better than the two preceding years, but their poverty is full up to the *usual standard*. Not only have large families of children been sent for by their parents, who have managed to get money sufficient to pay their passage to this country, but many orphan children and paupers, of the most unfortunate kind, assisted (by their landlord) to this country, and will very soon become inmates of our public institutions,—in fact, many are already there."

[1] While this sheet is passing through the press, the State census of the City has been published; and it appears that the population is now 138,788,—of whom 63,320, or 45.62 per cent., are foreigners. This proves the correctness of the above estimate, and shows a *decrease* of 1,879 Americans, and an *increase* of 26,031, or 13 per cent., of foreigners.

male employment office, of 8,602 applicants, 5,034, or 58 per cent., were foreigners.

The whole number of persons relieved as paupers in the county of Suffolk, for the year 1849, was 7,728,—of whom 4,549, or 58 per cent., were foreigners; and their proportion of the whole expense of $103,716, was over $60,000. The number of paupers in the whole State was 24,892,—of whom 10,253, or 41 per cent., were foreigners, and their proportion of the whole expense of $441,675, was $182,311.

The number of foreign paupers was 7,413, in 1848, and only 2,765, in 1838; showing an increase in 10 years of 268 per cent. In the last 11 years, 42,928 foreigners have been assisted, at an expense, beside all money which has been received from them, of $737,564.

The city of Boston is this year building a large house at Deer Island, for paupers, at an expense of $150,000; and an extensive jail, at an expense of 5 or $600,000; both of which are unnecessary for the native population! The existing public buildings would have been sufficient but for the great increase of foreigners.

Of 1,170 dramshops in Boston, in June, 1849, over 800, or 70 per cent., were kept by foreigners.

More than *three fourths* of all the arrests by the night watch and police in Boston, and nearly three fourths of all the commitments to the county jail, and of the cases before the police and municipal courts, were those of foreigners.

There have been committed to the house of correction in Boston, during the last five years, 3,737 persons,—of whom 2,348, or 63 per cent., were foreigners, and 37 per cent. Americans; and, in the last year, the proportion of foreigners was very much larger. And in the whole State, during last year, the commitments were 3,035,—of which 1,770, or 58 per cent., were of foreigners. The increase of crime has been very great during the last eight years, but it has been almost entirely among the foreign population. Notwithstanding the increase of the native inhabitants, the number of commitments among *them* has not increased.

About one third of all the inmates of the State prison, for

the last twenty years, have been foreigners. And the State has appropriated $100,000, this year, for the erection of an additional building for the reception of prisoners, which would have been unnecessary were it not for the great increase of foreign criminals.

In the Boston Lunatic Hospital, 327 inmates were received, from the time it was opened, in 1839, to 1845, of whom 160, or 48.93 per cent., were foreigners.

For the nine years, 1837–1845, inclusive, the Boston Dispensary had under its care 21,908 cases; of these, 15,522, or 70.56 per cent., were those of foreigners and children of foreigners, and 1,876 only of Bostonians. And during the year ending September 30, 1849, it had 3,950 cases,—of which 3,487, or 88 per cent., were those of foreigners, and 463, or 12 per cent., only were those of Americans.

At the Boston almshouse establishment, on Deer Island, 4,816 persons were admitted, from the time it was opened, in 1847, to January 1, 1850, of whom 4,661, or 97 per cent., were foreigners; and 155, or 3 per cent. only, were Americans. The number who were sick when admitted were 4,069, of whom 759 have died; 402 remained January 1, 1850, of whom 369 were foreigners, and 33 Americans.

In 1849 there died of cholera, in Boston, 707 persons, of whom 572, or 81 per cent., were foreigners; and 135, or 19 per cent. were Americans; 42 only were Bostonians.

5,079 persons died in Boston in 1849, of whom 2,982, or 59 per cent., were foreigners.

Similar facts might be multiplied; but if these will not command attention, it would be a work of supererogation to go farther.

As long ago as 1834, the commissioners for revising the poor laws of England, among other measures, "recommend that the vestries of each parish be empowered to order the payment, out of the rates raised for the relief of the poor, of the expenses of the emigration of any persons having settlements within their parish."[1] This recommendation was embodied in the 62d section of the Poor Law amendment act,[2] and there

[1] Report of Commissioners on Poor Laws, 1834, p. 357.
[2] First Report of Poor Law Commissioners, p. 90.

is no doubt, that, in very many instances, it has been carried into practical operation. Some poor-houses have been emptied, and their inmates have been transported to America,—to Massachusetts! The stream of emigration has continued to increase, and seems to gain a new accession of strength in every passing year. Massachusetts seems to have resolved itself into a vast public charitable association. Into her institutions are admitted the emigrant pregnant woman at her lying-in; the child to be nursed and educated; the pauper to be supported; the criminal to be punished and reformed; the insane to be restrained and cared for; the sick to be nursed and cured; the dead to be buried; the widow to be comforted; the orphan to be provided with a substitute for parental care; and here ten thousand offices of social and personal kindness and charity, not recognized by the public laws of the State, costing thousands upon thousands of dollars, are bestowed. The doors of these great institutions have been thrown wide open; the managers of the pauper-houses of the old world, and the mercenary ship-owners who ply their craft across the Atlantic and pour their freight freely in, each smile at the open-handed, but lax system of generosity which governs us, and rejoice at an opportunity to get rid of a burden, or *make a good voyage.* And a yet greater calamity attends this monstrous evil. Our own native inhabitants, who mingle with these recipients of their bounty, often become themselves contaminated with diseases, and sicken and die; and the physical and moral power of the living is depreciated, and the healthy, social and moral character we once enjoyed is liable to be forever lost. Pauperism, crime, disease and death, stare us in the face.

We will not attempt to suggest a remedy for this most pregnant anomaly. It requires to be more carefully studied, and more thoroughly surveyed than the present occasion allows. The State should pass suitable laws on the subject, and the general and local Boards of Health should carefully observe these evils in all their sanitary bearings and relations. We would, however, suggest,—

1. That emigration, especially of paupers, invalids, and

criminals, should, by all proper means, be discouraged; and that misrepresentation and falsehood, to induce persons to embark in passenger-ships, should be discountenanced and counteracted.

2. That ship-owners and others should be held to strict accountability for all expenses of pauper emigrants, and that existing bonds for their support should be strictly enforced.

3. That a system be devised by which all emigrants, or those who introduce them, by water or by land, should be required to pay a sufficient sum to create a general sinking fund for the support of all who may require aid in the State, at least within five years after their arrival.

4. That such a description of each emigrant be registered as will afford the means of identification of any one, at any time, and in any place, within five or more years after arrival.

5. That encouragement be given to emigrate from places in this State, where there is little demand for labor, to other places; and that associations be formed among the emigrants for settling on the public lands of the United States.

6. That efforts be made, by all proper means, to elevate the sanitary and social condition of foreigners, and to promote among them habits of cleanliness and better modes of living.

7. That our system of social and personal charitable relief should be revised and remodeled, and that a general plan be devised which shall bring all the charities of the city, county and state, under one control, and thus prevent injudicious almsgiving and imposition.

8. That an establishment for paupers, including a farm and workshops, be formed in each county in the State, to which State paupers might be sent, and where they should be required to labor, as far as practicable, for their support.

II. SOCIAL AND PERSONAL MEASURES RECOMMENDED.

Most of these recommendations may be carried into effect without any special legislative authority, State or municipal.

XXXVII. We recommend *that a sanitary association be formed in every city and town in the State, for the purpose of*

collecting and diffusing information relating to public and personal health.

The subject of sanitary improvement is comparatively new. Few minds, in this country at least, have as yet been led to examine it, to see its bearing upon the welfare and progress of humanity. Those, however, who have looked at it with any considerable degree of care, have been convinced of its importance; and it only requires to be generally understood to be universally regarded as *the* great subject of the age. Public opinion needs to be educated, and in no way can it be more effectually done than by associated effort. If a Metropolitan Sanitary Association existed in Boston, as a central agency, and a Branch Sanitary Association in every city and town in the State, they might do much to effect this object, by collecting and diffusing useful information; and, by their coöperation with the public authorities, render the discharge of their duties comparatively more easy. Inestimable benefits might thus be secured to the cause and to the people. To aid those who may wish to form such associations, we suggest the subjoined form of a constitution:[1]

XXXVIII. We recommend *that tenements for the better accommodation of the poor, be erected in cities and villages.*

[1] I. This association shall be called the ——— [here insert the name of the place] Sanitary Association.

II. The object of the association shall be,—1. To institute and promote local and personal sanitary inquiries and improvements. 2. To correct misconception and misrepresentations of the nature and design of sanitary measures. 3. To promote the passage of useful laws, ordinances and regulations, relating to public health. 4. To aid the public authorities, by coöperation and assistance, in carrying them into effect. And 5. To collect and diffuse, by personal intercourse, public lectures, printed works, or otherwise, information, especially as to the sanitary condition of this town and its inhabitants, and generally as to the sanitary condition of this State and other places, and their inhabitants; to the end that among all persons the laws of health and life may be better understood, the causes of disease known and avoided, the term of life extended, the vital force and productive power increased, and the greatest possible amount of physical and sanitary happiness enjoyed.

III. Any subscriber paying ——— annually shall be a member for one year; and any subscriber paying ——— at any one time shall be a member for life.

IV. The officers of the association shall be, a president, vice president, secretary, treasurer, and auditor, who shall be chosen at the stated meeting in January, or at any other time when a vacancy shall have occurred; and who together shall constitute the Board of Directors.

V. Committees may be appointed to investigate and report upon local or general subjects embraced in the objects of the association.

VI. The association shall meet statedly on the second Thursday of each month, and at such other times as the Board of Directors shall appoint. At the meeting in January a report shall be made of the proceedings during the next preceding year.

VII. By-laws for the more particular government of the association may be made by the Board of Directors.

VIII. No alteration of this constitution shall be made, except at a stated meeting, on recommendation of the Board of Directors, and by a vote of two thirds of the members present.

The condition of dwelling-houses has a most intimate and important relation to the health of the inmates; and there is no doubt that the diseases of the laboring classes and the poor, are often produced and accelerated to fatal results, from defects in these respects, which are removable.

In 1846, a meeting of the citizens of Boston was held, and a valuable "Report of the committee on the expediency of providing Better Tenements for the Poor," was adopted and published. After stating many interesting particulars relating to the subject, the committee came to the conclusion:

"1st. That property invested in well-constructed and well-situated houses, to be leased to the poorer classes of tenants, by apartments and by the week, is as safe as any other real estate excepting the best, and far more so than the average.

"2d. That it yields as much as any real estate which is equally safe.

"3d. That, by putting a portion of his funds into such buildings, the capitalist may confer an immense benefit on his fellow-citizens, which must soon react upon himself or his children.

"4th. That he would thereby incur no risk of doing a collateral injury, such as, in many forms of *charity*, goes so far to offset the most obvious benefits."

And they recommend to accomplish such an object:

"1st. To form a company to hire buildings and let rooms to poor tenants under direction of a paid agent; and

"2d. To take such steps as may seem to them best, by the establishment of chartered or private companies, to procure the construction of large, well-fitted buildings, especially designed for the use of such tenants."

Wishing to learn what had been done, and how far the experiment had succeeded, we addressed inquiries to Stephen H. Perkins, Esq., of Brookline, the author of the Report above referred to, and obtained from him the communication which appears in the appendix. We have also given, immediately following that communication, extracts from the able Report of Dr. Simon, "On the sanitary condition of the city of London," presented November 6, 1849. These documents

afford much interesting information on the present state of this question, and we particularly commend them to public and general attention. We recommend the subject as worthy the patronage of the wealthy and philanthropic, as a means of raising the public sanitary condition of cities. Those who "cast their bread on the waters" in this way give to receive again.

XXXIX. We recommend *that public bathing-houses and wash-houses be established in all cities and villages.*

Within the last few years, a new movement for the general and sanitary benefit of the poor has been made, in the establishment of public bathing-houses and wash-houses. Liverpool has the honor of originating the idea, and of erecting the first institution, which was opened the 28th of May, 1842. A second one was erected there in 1847. The statistics of these two establishments show that the public patronage has been annually increasing from their commencement, and that, during the year ending August 31, 1849, the number of baths taken was 104,691; the number of dozen clothes washed, 120,875; the receipts were £1,230 4s. 11d., and the expenses £1,392 17s. Dr. Duncan, the Medical Officer of Health of Liverpool, to whose kind attention we are much indebted, wrote us on the 4th of December last:—"You will observe that the income nearly, but not quite, equals the expenditure; but so well satisfied are the town council of the benefits conferred on the working classes by these establishments, that they have recently decided to erect six additional baths and wash-houses in different districts of the borough, at a cost of £25,000. The land for four of these buildings is purchased, and one of them is now in course of erection. This will contain two plunge baths, one 42 by 27 feet, and the other 39 by 27 feet; 49 dressing boxes, 87 washing halls, 8 infected washing halls, 10 first class private baths, and 33 second and third class."

The example of Liverpool has been followed in many other places in Great Britain. Dr. John Robertson, of Manchester, furnished us with the following facts concerning a portion only of these institutions in that city. In three years, ending September, 1849, there had been given 79,408 baths, of which

30,242,—27,626 for men, 2,616 for women,—were of the first class; and 49,166,—43,377 for men, and 578 for women,—were of the second class. There had been 16,907 washers, and 594,294 dozen articles washed. The receipts had been £1,227, and the expenses £1,194, leaving a balance in their favor, for the three years, of £33.

Dr. Simon, of London, says, in his report, already referred to, that "the committee for promoting the establishment of baths and wash-houses, having Sir H. Dukinfield for its chairman, and including in its number, with other influential persons, several members of this corporation, founded, at great pains and expense, a model institution at Goulston Square, Whitechapel. In spite of many circumstances conspiring to render this first and experimental establishment particularly expensive, it has more than supported itself by the small payments of the poor; and its arrangements are sufficiently extensive for it to have given on one day as many as 932 baths. This fact having occurred in the first year of its establishment, shows how much the poor must have appreciated the additional comfort placed within their reach; and I may add, that, from the first opening of the building, the annual receipts have been progressively on the increase. Somewhat earlier, and under the influence of the same parent committee, though specially directed by a branch committee, a similar establishment was founded in George St., Euston Square. During the year 1848, the number of payments made here for bathing was 111,788; the number of payments for washing in the laundries, 246,760. This establishment has not only proved self-supporting, but has been enabled to accumulate a large surplus, which is now being applied to enlarge and improve the building. At Glasshouse Yard, near the entrance to the London Docks, there has been founded, on the same model, a small establishment of free baths and wash-houses for the destitute poor. It was opened in May, 1845. In its first year, the baths given amounted to 27,662; the usings of the laundry, to 35,840; and its total working expenses were covered by £378.

"No language, however eloquent, no comment, however instructive, could equal the significance of the figures which I have cited, as illustrating the great utility of these institutions;

and, as regards their pecuniary success, it is impossible to furnish you with better testimony than is comprised in the fact, that the guardians of the poor in a great metropolitan parish have recently, out of the poor-rates, founded an institution of this nature. They have become witnesses to the financial economy of that sanitary and social boon. In their establishment, which is not only self-supporting but amply remunerative, the poor are enabled to have baths at an expense of a penny for a cold and two pence for a warm bath; and the women are enabled to do their washing, ironing, and drying, with an unlimited water supply, and with other arrangements of the most admirable completeness, at an expense of only two pence for the first two hours during which they occupy the separate chambers allotted to them. A very considerable proportion of the expense is covered by the receipts for baths given at the higher price of six pence, and with some additional luxuries, to persons of a higher grade in society than those who use the ordinary baths; the former, though used by a different class of persons, being sought with almost as much avidity as the latter.

"In the sanitary point of view, I probably need not insist much on the advantages which these establishments have conferred. You will hardly doubt how good and wholesome a thing it has been for so many thousands to have had the means of cleansing their bodies and their clothing, who, in the absence of such facilities, must often have carried about their persons a long and offensive accumulation of dirt and sweat."

A movement was made by the city of New York to establish these institutions, and a valuable report on the subject, submitted to the Board of Aldermen, May 29, 1849, has been published. An act of incorporation was obtained from the legislature; but how far their proposed measures have been carried into effect we are not informed.

In Boston there are twelve or more bathing establishments, owned by individuals, who charge twenty-five cents for admission. At the Eolian Baths in Washington Street, fitted up in excellent style, those on Cragie's Bridge, and those on Warren Bridge, twelve and a half cents is charged. These establish-

ments are much frequented, and, on a single Saturday night, 200 bathers are known to have been admitted to one of them. The sanitary advantages which would result to all, and especially to the poorer classes, by a more extended practice of bathing, have often been subjects of discussion. On the 7th of January, 1850, Dr. Samuel Cabot, Jr., read before the "Society in Aid of Social Improvement," a report on the subject, which was published. The Boston Bathing and Wash-house Company was incorporated, March 11, 1850, for the purpose of establishing bath and wash-houses in different parts of the city; and this organization, it is believed, if properly conducted, will serve all the purposes designed by such establishments.

XL. We recommend *that, whenever practicable, the refuse and sewage of cities and towns be collected, and applied to the purposes of agriculture.*

The refuse and sewage of cities and villages are of great value as manure; and plans have been devised abroad to collect and apply them for agricultural purposes. Companies have been formed, estimates made, and experiments tried, to test their value, and to devise the best means by which they might be used. As to their great value all agree; but the different plans of collecting and distributing them, seem not as yet so fully tested as to warrant a recommendation of any particular one in preference to others. We insert some extracts from different works, and recommend the subject to the careful examination of those interested. Public urinals and public privies should be erected in every populous city and village, and placed under regulation of public authority, for the purpose of convenience, economy, and health.

"The value of manures as promoters of vegetation is known to result from their possession of the essential element, nitrogen, in the form of ammonia, with the subordinate properties of alkalies, phosphates, and sulphates. Now the experiments of Boussingault and Liebig have furnished us with the means of estimating the quantity of nitrogen contained in the excrements of a man, during one year, at 16.41 lbs., upon probable data, and also that this quantity is sufficient for the supply of 800 lbs. of wheat, rye, or oats, or of 900 lbs. of barley. 'This

is much more,' says Liebig, 'than it is necessary to add to an acre of land, in order to obtain, with the assistance of the nitrogen absorbed from the atmosphere, the richest crops every year. By adopting a system of rotation of crops, every town and farm might thus supply itself with the manure, which, besides containing the most nitrogen, contains also the most phosphates. By using, at the same time, bones and the lixiviated ashes of wood, animal excrements might be completely dispensed with on many kinds of soil. When human excrements are treated in a proper manner, so as to remove this moisture without permitting the escape of ammonia, they may be put into such a form as will allow them to be transported even to great distances.' Making reasonable allowance for the reduced quantity produced by children, we shall be safe in assuming the nitrogen thus resulting from any amount of population to be equal to the supply required for affording 2 lbs. of bread per diem for every one of its members! Or assuming an average of 600 lbs. of wheat to be manured by each individual of the population of London, and taking this at two millions for a rough calculation, the manure thus produced is sufficient to supply the growth of wheat of a total weight of 1200 millions of pounds, or 535,714 tons. The total manuring matters, solid and liquid, produced in a town, allowing for those which are produced in manufactories and sewage water, are probably equal in weight to one ton annually for each member of the population, or two millions of tons produced in the metropolis. That this vast quantity of manure should be made available for agricultural production, is a principle which cannot be denied, and which is properly limitable only by the consideration of expense as weighed against the value of the results. The expense will be made up mainly of three items, viz.: of the *collection*, of the *raising*, and of the *distribution* of the refuse matters."

"A very reduced estimate of the value, for manure, of the excreta of human beings, (reduced avowedly for the sake of gaining public belief,) represents it at 5s. for each person, annually. The value of the produce of the population of London would thus be £500,000 per annum. Admitting one-half

of this to be now made available, we shall have the other half, amounting to £250,000, gained by the proposed mode of collection; and adding this to the £134,000 estimated saving, we have a total of £384,000 annually available for the expenses of construction and repair of apparatus, and current cost of collecting, raising and treating the sewage of the metropolis. This sum will endow thirty-eight stations with an annual income each exceeding £10,000, for interest of capital in first construction and current expenses of working and treating. And this number of stations appears fully adequate to realize all the economy of power which can be attained by judiciously providing for several levels in each district of the metropolis." [1]

Mr. Charles F. Ellerman, in his treatise on "Sanitary Reform and Agricultural Improvement," urges two points on this subject:—

"1. Any plan is unhealthy, uncleanly, and enormously wasteful, which consigns the excreta of the population to rivers or water-courses.

"2. Any plan whereby the refuse of towns is employed to fertilize the country, is seriously defective, unless due provision is made that nuisance and injury to public health shall not arise; that substances pernicious to vegetation shall not be mixed with those which are beneficial to vegetation; that the smallest possible quantity of the latter shall be suffered to escape; and that it shall be saved in such a form as may admit of its being rendered available in any place, and in such a state of dilution or concentration as varying soils, seasons, or other circumstances, may require.

"Of the immense economic value of the preservation of human excreta, when we are sending whole fleets in search of those of birds, [guano,] which consist of precisely the same materials in a less advantageous form, no thoughtful man can entertain a reasonable doubt. Mr. Smith, a well-known agriculturist, 'rates the average annual value of the excreta of each individual at £1; so that, taking the whole population of Great Britain at twenty-eight millions, we are positively *throwing away*, every year, that which is equivalent to *twenty-eight mil-*

[1] Dempsey's Drainage and Sewage of Towns and Buildings, pp. 4, 5, and 20.

lions sterling! The actual saleable value in Belgium of the excreta is 37 shillings for each individual.' There may be extravagance in this estimate; but, according to Dr. Playfair, a pound of urine is capable of increasing the production of grain by an equal weight; so that, even allowing for some exaggeration, the human urine at present wasted in this country would serve to produce more than all the grain required for the consumption of the entire population." [1]

"It is a law of nature that the vegetable and animal kingdoms should be, as it were, supplementary the one to the other. Animals, by breathing air, load it with carbonic acid, and render it noxious to themselves; while vegetables absorb the acid gas, and give out oxygen in its stead, and thus supply the animal kingdom with vital air. Then again, whatever elements an animal takes from the soil as food, it returns again to the earth in a different form, noxious to itself, but nevertheless furnishing to the vegetable kingdom abundant and wholesome nourishment. It is thus that the organic elements complete their circuit in living beings. Nothing is lost, it is only reproduced in another form. These principles lie at the root of the whole science of agriculture, while they constitute the basis of all economical sanitary arrangements.

"The principle has been long admitted, and to a certain extent acted upon, that the refuse of a town, when applied to agricultural purposes, has some money value; but there seems, with few exceptions, to have been no approximation even to an adequate estimate of that value. It is stated in Dr. Playfair's report, made in 1844, that the amount obtained by the sale of the town manure of Manchester was £800 per annum; and in Liverpool it produced £1,150; while at Rochdale it was only worth £18 10s. In some of the Scotch towns these things are managed better. The cost of cleansing Edinburgh is £12,000 pounds a year, and the manure, which is public property,—*as it ought to be in all towns*,—sells for £10,000 per annum. At Perth and Aberdeen the manure pays the whole cost of cleansing, and returns, in addition, an annual revenue of £430 to the former town, and £600 to the latter.

[1] British and Foreign Medico-Chirurgical Review, Vol. II, p. 237.

The whole of the rich and beautiful country extending from Gravelines to Ostend, originally consisted of a barren, sandy waste, which has, in the course of ages, been converted into a garden by the continued application of manure brought from a distance.

"The instances given above show, in all probability, the most that has been made of solid town manure. It is expensive to collect and remove, as well as to distribute over the land, and a good deal of the weight and bulk of it is unproductive; while in all towns where cesspools exist, the best part of the manure sinks into the subsoil or evaporates into the atmosphere, so as not only to be a loss to the public, but a serious cause of disease. Common sense, therefore, as well as economy, would point out the necessity of having a perfect system of sewers for every house, court, and street, so as to convey away all the manure in a liquid form, diluted with water. It should never be mixed with coal-ash and cinders, which ought to be removed separately. Now this liquid manure, SEWER WATER, which is at present poured into our dock-basins, as a nuisance to be got rid of, might be made a source of great wealth to the town. If by any means it could be brought in contact with the barren soils in the neighborhood, it would cover them with the most luxuriant vegetation. Fortunately this is not a matter of mere speculation. It has been in operation for many years, and we are much mistaken if the practice does not become universal, so far, at least, as circumstances will permit. The sewer water of several of the towns in Devonshire is employed for the purposes of irrigation, particularly at Ashburton, where it has been so applied for above forty years. The meadows are deep drained, to prevent any stagnation, and the sewer water is thus allowed to pass off as soon as it has given its nutritious principles to the grass. Land which is not under this irrigation yields a coarse herbage, with rushes; but after the application of the liquid manure it grows the finer and more nutritious grasses in abundance, and there is a crop for ewes and lambs fully a month earlier than in other situations not similarly circumstanced. The value of *unimproved* land is from 30s. to 40s. an acre, but *after irrigation* it is worth from

£8 to £12 per acre. We have here, at all events, a very strong proof of the value of the manure.

"The whole of the sewer water of Milan, a city containing 150,000 inhabitants, is distributed by channels over a large extent of meadow land, which it fertilizes to a prodigious degree. During the summer months the irrigation takes place for a few hours once a week, and during the winter it is nearly permanent. The meadows are mown in November, January, March, and April, for stable feeding; and in June, July, and August, they yield three crops of hay for winter; while in September they furnish abundant pasture for cattle till the beginning of the winter irrigation. These lands, after paying land-tax and all other expenses, yield a net annual rent of eight guineas an acre.

"The most remarkable example, however, of the value of this kind of irrigation is afforded by certain meadows in the neighborhood of Edinburgh. A portion of the sewer water of the Old Town is received into ponds, and allowed to deposit a considerable quantity of solid matter. From these ponds it is allowed to flow equally over plots of land, so as to cover them, and after passing through the soil it is carried off by thorough drainage. Three kinds of soil have been treated in this way: 1st, a strong loam on a clay subsoil; 2d, a lighter soil nearer the sea; and 3d, *a pure sea sand, without any appreciable mixture of earthy matter*, going down to high-water mark. About 300 acres have been irrigated at various times, some for upwards of 30 years. The productiveness of these meadows is extraordinary. In the year 1835, some of the richest land was let for £38 an acre; and in 1826, which was a scarce year, as much as £57 per acre was obtained for the same meadows. Mr. Smith, of Deanston, who is the highest authority on such subjects, concludes his report of this most satisfactory experiment as follows:—

"'The practical result of this application of sewer water is, that land, which let formerly at from 40s. to £6 per Scotch acre, is now let annually at from £30 to £40; and that poor, sandy land on the sea-shore, which might be worth 2s. 6d. per acre, lets at an annual rent of from £15 to £20. * * The average value of the land, irrespective of the sewer water ap-

plication, may be taken at £3 per imperial acre, and the average rent of the irrigated land at £30, making a difference of £27; but £2 may be deducted as the cost of management, leaving £25 per acre of clear annual income due to the sewer water.'" [1]

XLI. We recommend *that measures be taken to prevent, as far as practicable, the smoke nuisance.*

The smoke of furnaces, manufactories, and other establishments, is often a great nuisance to a neighborhood, and is supposed to be deleterious to health. It corrupts the air, and often renders it unfit for respiration; and all proper and practicable measures should be adopted to prevent the evils which result from it. Experiments have been made in the manufacturing towns in England, to construct furnaces and fireplaces so as to *burn up the smoke*, as fast as produced, and thus prevent its escaping, to become an inconvenience, nuisance, or injury to the inhabitants. These experiments have shown that the arrangement is an economical and practical as well as a sanitary improvement. Less fuel is required when the smoke is burned than when it is permitted to escape unburned. We desire to call the attention of all interested to the subject, as worthy of careful investigation. Several important facts and illustrations relating to this subject may be found in recent English sanitary publications.[2]

XLII. We recommend *that the sanitary effects of patent medicines and other nostrums, and secret remedies, be observed; that physicians in their prescriptions and names of medicines, and apothecaries in their compounds, use great caution and care; and that medical compounds advertised for sale be avoided, unless the material of which they are composed be known, or unless manufactured and sold by a person of known honesty and integrity.*

[1] Liverpool Health of Towns Advocate, pp. 60–62.

[2] "The smoke nuisance is, perhaps, one of the most gratuitous injuries inflicted on the public, for, in the first place, it is altogether unnecessary, and, secondly, it costs the perpetrators of it a good round sum every year to keep it going. The loss to the public, from *excess* of washing, &c., which a smoky atmosphere renders necessary, is more than at first sight might appear. Dr. Lyon Playfair has shown, that in this one item Manchester has been expending £60,000 a year, and that, if the expense of additional painting and whitewashing be added, the actual money loss would be *double the amount of the poor rates* every year. The Rev. Mr. Clay states, that in Preston only two furnaces consume their smoke, and even that imperfectly; but were all the factories in town to do as much, the public would save £10,450 a year in extra washing."—*Liverpool Health of Towns Adv.*

The sanitary effects of patent medicines and other nostrums, advertised for sale, is one of the greatest evils of the present day. If the people were aware of the immense amount of such sales, and of the impaired health, the ruined constitutions, and the premature deaths, which they occasion, they would be astounded. An insatiable desire to make money, frequently without regard to the justice or morality of the means, on the part of the manufacturers and venders, and an inclination to do something for the relief of real or imaginary suffering, and an unenlightened belief, on the part of purchasers, that what is advertised as true must be true, are the prominent causes of this monstrous evil. This matter has attracted much public attention, but not so much as its importance demands; and no plan for a sanitary survey of the State would be perfect in which it was omitted. There is much good sense in the Transactions of the Medical Society of the State of New York. On the 7th of February, 1849, a report was adopted, from which we make the following extracts:—

"So far as the pecuniary interests of our profession is concerned, the vending of secret nostrums is advantageous, since it unquestionably greatly increases the amount of disease whenever such nostrums are used. We, therefore, invite no legislation in this matter for the protection of ourselves, yet, as members of a humane profession, we do not feel at liberty to withhold our advice, as all experience has shown that the most effectual mode of correcting imposition is to divest it of mystery, and thus enable an intelligent community to judge of its truth or falsity; and because we think, in a humane science, designed for the relief of physical suffering, it is a great wrong to deprive the world of any knowledge which one may possess of the means of saving life or alleviating suffering. Therefore we recommend, that all articles designed for medical use, and put up for sale as merchandise, shall be by law required to be accompanied with the names of the constituents, written or printed in plain and legible English."

On the same day another resolution was passed:

"*Resolved*, that a prize of *twenty dollars* be offered by this society for a tract, of not less than four nor more than sixteen

pages, which shall most clearly expose the pernicious influence of nostrums and secret remedies, upon the health and morals of the community." [1]

"The time will come when that system of legislation which allows unprincipled men, for their private benefit, to send forth patent medicines under the great seal of the nation, will be seen to be no other than a licensed imposition on the public. Health and life are too valuable to be thus sacrificed. Any man who really believes that he has discovered the means of mitigating human suffering, is bound, by every principle of morality and benevolence, to publish it to the world. The power to do good implies and involves an obligation to do it, and the fact of an attempt to conceal from men that which is represented to be of paramount importance for them to know, is presumptive evidence of want of integity. The triumph of ignorance over science is the precursor of the downfall of our republic." [2]

XLIII. We recommend *that local Boards of Health, and others interested, endeavor to prevent the sale and use of unwholesome, spurious, and adulterated articles, dangerous to the public health, designed for food, drink, or medicine.*

The evil suggested in this recommendation is nearly allied to that preceding. It is one of immense magnitude and importance, and exists to an extent greater than has been generally supposed. Prodigious quantities of spurious articles, of food, drink, and medicine, which are highly injurious, are daily palmed upon the public by mercenary and fraudulent manufacturers and dealers. And it is generally conceded that a great amount of disease and numerous premature deaths are thereby produced.

Food is adulterated in various ways. A recent writer enumerates the following purposes of these adulterations:

"1. To make the substance more saleable by improving its appearance, by the addition of some body innocuous or otherwise.

"2. To depreciate its quality, by adding to it some substance which will diminish its *real*, without altering its *appar-*

[1] Appendix to Transactions New York Medical Society, Vol. VII, pp. 96, 98.
[2] Dr. Alden. American Quarterly Register, Vol. XII, p. 263.

ent strength or general appearance. This is generally a very deadly fraud.

3. "To depreciate its quality by the addition of some simple substance, as water, or, if it be a solid body, as plaster of paris, sand, &c."

Bread is often adulterated with alum, carbonate of ammonia, carbonate of magnesia, sulphate of copper and zinc, &c., to improve its appearance, when made of flour of inferior quality. Butter and cheese are often poisoned with coloring matter. Milk is watered, sugar sanded, and various other intentional frauds are practiced. Unintentional adulterations may also sometimes take place by means of keeping or cooking different kinds of food.

Drink is also very extensively adulterated. It is said that very little of what is sold as champagne wine is made from the juice of the grape, but is a deleterious compound of other substances. Few of other kinds of spirituous liquors go to the consumer in a pure state. It is the opinion of eminent temperance reformers that one of the principal causes of the sad sanitary effects of intemperance arises from the poisonous substances compounded with the pure spirit and taken in the intoxicating cup. Other kinds of more ordinary drink, not intoxicating, and even water itself, may be adulterated and rendered unfit for use.

Drugs and medicines have been adulterated by the foreign producer, manufacturer and dealer, expressly for the American market, and vast quantities of such articles have been imported and sold in this country. Some of our own producers, manufacturers, and dealers, also, have been guilty of a similar fraud. By careful study the properties and mode of operation of the various articles used as medicine have been ascertained, and the intelligent, conscientious, curative physician, can estimate their effect with some degree of accuracy. It is necessary, however, to enable him to do this successfully, that they should be of known purity and strength. If spurious, of inferior quality, or adulterated with other substances, not contained in the genuine article, disappointment follows, and the patient suffers and perhaps dies. This result may happen

under the advice of the best curative medical skill, and life may be, and has actually been lost, from some defect existing alone in the medical remedies used. A mere statement of this fact will render obvious the importance of this recommendation.

In some of the governments of Europe no one is allowed to deal in drugs and medicines unless properly educated and licensed for the purpose; and a constant governmental supervision is exercised over all apothecaries, to keep them within the line of their specific duties, and to prevent them from selling articles which may be injurious to health. The system of free trade, and the entire absence of all such supervision in this country, has led many incompetent and fraudulent manufacturers and dealers to enter largely into this kind of business, and a system of imposition and positive evil has been carried on, which, if fully known, would fill the people with astonishment.

The subject was brought to the attention of Congress, and, on the 26th of June, 1848, "an act to prevent the importation of adulterated and spurious drugs and medicines," was passed. Under this act special examiners are appointed to reside in the various ports of entry, to carry the law into execution. Dr. W. J. Bailey, the examiner at New York, has reported that, during ten months ending April, 1849, about 90,000 pounds of various kinds of drugs have been rejected and refused admittance at the custom-house in that city alone! Among these were 16,989 pounds of rhubarb; 3,253 pounds of opium; 34,570 pounds of spurious yellow bark; 12,483 pounds of jalap; 5,058 ounces of iodine, and large quantities of various other articles. It has been said that "more than half of many of the most important chemical and medicinal preparations, together with large quantities of crude drugs, come to us so much adulterated, or otherwise deteriorated, as to render them not only worthless as a medicine, but often dangerous."

We extract from a report on this subject, by Hon. T. O. Edwards, M. D., the following passage:—"That adulterations of medicines, to a very considerable extent, will be carried on in this country, none can deny. Had Congress the power to prevent it, by a general law, it might be avoided. The general

government has done all in its power, and it is incumbent on the several states, by special statute, to render penal the conduct that endangers the lives and health of the citizens. No one can believe that adulterations here would be carried to the extent practised by foreigners. It is scarcely presumable that all the druggists will be engaged in a traffic so nefarious. The rivalry of business, the pride of the profession, and the higher and nobler motives of humanity, will be equal to the ingenuity and invention of the dishonest, and will effect its exposure. If this law be faithfully complied with, the house that sells an adulterated and spurious medicine *must needs have made it;* and the watchfulness of the profession, together with the numerous medical journals, jealous of the interests and informed of the rights of the medical profession, will proclaim the fraud. Law and public opinion will point to the remedy. The law requiring all medicinal agents imported to be pure, and of an acknowledged standard, will give an impetus to the employment of talents and capital in our own country. Having the advantage of the protection afforded by the duty, and a further guard against frauds by this law, American enterprise will soon rival older and more experienced chemists in the manufacture of necessary articles."

The Revised Statutes of Massachusetts contain the following provisions of law on the subject :—

"Sect. 1. If any person shall knowingly sell any kind of diseased, corrupted, or unwholesome provisions, whether for meat or drink, without making the same fully known to the buyer, he shall be punished by imprisonment in the county jail not more than six months, or by fine not exceeding two hundred dollars.

"Sect. 2. If any person shall fraudulently adulterate, for the purpose of sale, any substance intended for food, or any wine, spirits, malt liquor, or other liquor, intended for drinking, with any substance injurious to health, he shall be punished by imprisonment in the county jail not more than one year, or by fine not exceeding three hundred dollars, and the articles so adulterated shall be forfeited and destroyed.

"Sect. 3. If any person shall fraudulently adulterate, for the

purpose of sale, any drug or medicine, in such a manner as to render the same injurious to health, he shall be punished by imprisonment in the county jail not more than one year, or by fine not exceeding four hundred dollars, and such adulterated drugs and medicines shall be forfeited and destroyed."

This act gives sufficient legal authority to prevent the evil. If it be carefully observed, and only those dealers who are properly qualified for their business, and are of known honesty and integrity, receive public patronage, and those of an opposite character are discountenanced, and instances of flagrant abuse prosecuted and punished, it may be reasonably supposed that the evil will greatly diminish.

XLIV. We recommend *that institutions be formed to educate and qualify females to be nurses of the sick.*

It is hardly necessary to commend the importance of good nursing in the cure of disease. Let a physician be ever so skilful, and prescribe his remedies with ever so much care and sagacity, if the nurse does not follow his directions, or if she neglects her duty, or performs it unskilfully, or imperfectly, or with an improper *disposition*, the remedies will be unsuccessful, and the patient will suffer; and perhaps life is lost as the consequence. On the other hand, let a physician of moderate capacity prescribe with ordinary skill, if his orders are carried into execution by a nurse, who understands, loves, and conscientiously discharges her duty, the patient is relieved, and life is preserved as the consequence. It is thus that bad nursing often defeats the intention of the best medical advice, and good nursing often supplies the defects of bad advice. Nursing often does more to cure disease than the physician himself; and, in the prevention of disease and in the promotion of health, it is of equal and even of greater importance. Many and many a life, which might have been saved, has been lost in the hands of quack nurses, as well as in those of quack doctors.

In consequence of the great ignorance which generally prevails in regard to the laws of health, and the causes and cure of disease, there are few females or others who are really capable of acting as intelligent nurses. Many, it is true, announce themselves as professional nurses, and many in more private

life suppose themselves capable ; but how few really understand the duties of a nurse, or the domestic management of the sick-room, and how many lives are sacrificed in the hands of the ignorant! We have long desired that some remedy should be devised for this imperfection of our social life.

In 1836, there was founded at Kaiserswerth, a city on the Rhine, in Prussia, an "Institution of Protestant Deaconesses and Nursing Sisters." Its original object was the care of the sick and poor in the neighborhood of its location. A hospital was erected, into which the sick were admitted, and also such females of proper age as wished to devote themselves to the nursing and care of the sick. Here these females remained for a sufficient period of time to receive a thorough education in the knowledge and practice of the nursing and care of the sick ; and they were afterwards sent forth on their mission of mercy, to diffuse the blessings of their superior education wherever their services might be wanted. Some have been employed in the care of the sick in their own homes, others at the expense of private charitable institutions, and others in public hospitals. Its original object has been extended, and it has become an immense central institution, having the highest object of benevolence, and promising the greatest benefits to humanity.

To the Rev. Thomas Fliedner, pastor of a Protestant church in Kaiserswerth, belongs the honor of founding this noble institution. He paid a visit to the United States in 1849, and one of this commission had the pleasure of making his acquaintance. From a notice of the institution, which he furnished, we make the following extracts :—

"The success which the establishment at Kaiserswerth has met with has been very great. For, according to the twelfth printed report for 1849, above 115 deaconesses are now at work in different parts of Germany and England. Sixty-six are occupied in twenty-five hospitals and orphan-houses at Berlin, Dresden, Frankfort, Worms, Cologne, Elberfeld, London, etc. Sometimes, in a large congregation, which has no hospital, several of these nurses go about as mothers of the poor and sick, supporting and nursing them in their dwellings, and reporting their wants to their pastors and the overseers.

"The hospital at Kaiserswerth has received in these thirteen years about 3,500 patients, of both sexes, and of all religious persuasions, afflicted with divers diseases; many of them were admitted gratuitously.

"Some deaconesses have also been educated at Kaiserswerth, for hospitals in Switzerland, France, and Holland; and the calls from many parts of the continent, for deaconesses from Kaiserswerth, are so numerous, that this establishment cannot satisfy them all. It results from the testimonies of the administration and the medical officers of those public institutions, and it is a fact of general notoriety, that wherever these deaconesses have been intrusted with the care of a hospital, a visible change for the better takes place in all departments, and the satisfaction, the gratitude, and the blessings of the patients follow these self-devoted nurses everywhere.

"On the fifth of July, 1849, the Rev. Mr. Fliedner brought over, from the parent institution, four of these deaconesses, to the United States, to take charge of an infirmary established in Pittsburg, Pa., by the Rev. Wm. Passavant. It is proposed in this institution, likewise, to qualify other Christian females as deaconesses, to nurse the sick and poor in other American hospitals, congregations, and families. In this way, we trust, the new infirmary at Pittsburg will become, under God's blessing, a centre of light, love, and mercy.

"To the Christian reader it will be interesting to know, that the provision for the care of the sick and poor is not the only blessing which the parent establishment diffuses over many lands. It contains also three branch institutions, for other purposes:—*First*, a seminary, to train young females for infant, day, and industrial schools, which has already educated more than 370 such teachers for different parts of Europe, by the instrumentality of whom many thousands of poor children have been rescued from ignorance and misery, and led to their heavenly Friend. *Secondly*, an orphan asylum, connected with the mother-house, where twenty-five to thirty orphans of clergymen, missionaries, schoolmasters, &c., are educated by the sisters, in a Christian manner, as nurses, school-mistresses, &c. And *third*, a branch institution, designed to educate deaconesses

for the nursing and moral improvement of female prisoners. This branch is therefore connected with an asylum for released female prisoners, which Pastor Fliedner founded sixteen years ago, and which has received since then more than one hundred and eighty poor, deeply-fallen individuals, many of whom have been enabled, by Christian instruction, to become good servants, and respectable members of society."

The eminent success which attended these establishments has led to the formation of similar ones in other places on the continent of Europe, and in England. From an interesting notice which appears in the Edinburgh Review, we extract the following statement, to illustrate their good results:—

"An epidemic nervous fever was raging in the two communes of the circle of Duisburg, Gartrop, and Gahlen. Its first and most virulent outbreak took place at Gartrop, a small, poor, secluded village, of scarcely 130 souls, without a doctor, without an apothecary in the neighborhood, while the clergyman was upon the point of leaving for another parish, and his successor had not yet been appointed. Four deaconesses, including the superior, Pastor Fliedner's wife, and a maid, hastened to this scene of wretchedness, and found from twenty to twenty-five fever patients in the most alarming condition; a mother and four children in one hovel, four other patients in another, and so on; all lying on foul straw, or on bedclothes that had not been washed for weeks, almost without food, utterly without help. Many had died already; the healthy had fled; the parish doctor lived four German leagues off, and could not come every day. The first care of the sisters, who could have found no lodging but for the vacancy of the parsonage, was to introduce cleanliness and ventilation into the narrow cabins of the peasants; they washed and cooked for the sick, they watched every night by turns at their bedside, and tended them with such success, that only four persons died after their arrival, and the rest were left convalescent after four weeks' stay. The same epidemic having broken out in the neighboring commune of Gahlen, in two families, of whom eight members lay ill at once, a single deaconess had the happiness, in three weeks, of leaving every patient restored to health, and of having pre-

vented the further spread of the disease. What would not Dr. Southwood Smith or Mr. Chadwick give for a few dozen of such hard-working, zealous, intelligent ministers, in the field of sanitary reform ?" [1]

We commend this matter earnestly to public attention. In what way it could be best carried into effect, we will not attempt to specify. We would, however, suggest that arrangements be made in the Massachusetts General Hospital, and in other similar institutions, to admit females of a proper character to be educated for these special objects.

Preliminary proceedings have taken place for erecting a new hospital in Boston, for the accommodation of the laboring classes and the poor. If such an institution should be established, this should be one of its purposes. It might be made a kind of normal school, of the highest character and usefulness, at which females and males might be educated and prepared to be intelligent nurses in and out of the city ; and thus confer the double benefit of relieving its own patients and contributing to the relief of others. There are many females among us who wish for employment and support ; and we know of no way better than this in which they might obtain their desires, and at the same time make themselves honored and eminently useful to others.[2]

XLV. We recommend *that persons be specially educated in sanitary science, as preventive advisers as well as curative advisers.*

The great object of sanitary science is to teach people the causes of disease,—how to remove or avoid these causes,—how to prevent disease,—how to live without being sick,—how to increase the vital force,—how to avoid premature decay. And one of the most useful reforms which could be introduced into the present constitution of society would be, that the advice of the physician should be sought for and *paid for* while in health, to keep the patient well ; and not, as now, while in sickness, to cure disease, which might in most cases have been avoided or prevented. And this practice, we understand, exists to some

[1] Edinburgh Review, Vol. LXXXVII, for 1848, p. 442.
[2] For further information, see article " Deaconesses and Protestant Sisterhoods," Edinburgh Review, Vol. LXXXVII, for 1848, pp. 430–451, and the works there reviewed.

extent in some civilized countries. Three existing reasons, however, now occur to us, which we fear will prevent or obstruct, at least for a considerable period, the introduction into our country of this useful reform. One reason is, that persons who are well generally think that they have no need of a physician;—another, that if advice is sought for or given at such times, it is not generally considered worth paying for;—and a third, that there are few persons educated in sanitary science, and capable of giving good sanitary advice. These are fatal errors, and should be corrected, for they have cost thousands of lives. Sanitary professorships should be established in all our colleges and medical schools, and filled by competent teachers. The science of preserving health and preventing disease should be taught as one of the most important sciences. It would be useful to all, and to the student in curative medicine as well as to others. To the young man who is educating himself for the great purposes of life, whatever profession he may select, it cannot be inferior, in interest and importance, to any other branch of education. An illustration of our ideas on this matter is contained in the following extract from the Weekly Summary of the Public Health in London, issued by the Registrar-General, Sept. 19, 1849:—

"No city, perhaps, ever possessed such an efficient body of medical men as are now practising in London. During this epidemic they have performed services which in any other field must have won the highest honors; combating the disease night and day in the most pestilential quarters, and that on much more settled principles than the public might be led to suspect from certain discussions at the medical societies. And their office has been discharged with so much kindness as to deserve the gratitude of the poor, instead of drawing down on their heads the charges with which the physicians of other countries have often been assailed by the populace. Nearly all the sick have been seen by these practitioners, yet 14,500 persons have already died of cholera in London. How is this? The medical force will be found to have been employed at an immense disadvantage. It is called into action at the wrong end of the malady. Inquiries prove, that while medical advice

is generally sought in the characteristic stage, it is seldom obtained in the premonitory stage, when the power of medicine is decisive; and to that earlier and still more important period preceding the premonitory stage, which is prevented as easily as cured, medical practice has had little or nothing to say. Cholera here, also, only shows in high relief what exists in ordinary circumstances. Medical men rarely if ever treat the beginnings of diseases, and are scarcely ever consulted professionally on the preservation of the health of cities or families. The art of preserving health is taught in no regular course of lectures at any of the great schools of medicine in the United Kingdom. Yet the classical sanitary works of Pringle, Lind, Blane, Jackson, Johnson, and Martin, have been framed from observation in the British navy and army. In the science of health there are more exact, demonstrable truths than in the science of disease; and the advantage of 'prevention' over 'cure' requires no proof. In the Cyropœdia of Xenophon, physicians who only treat the sick are compared to 'menders of torn clothes,' while the preservation of health is declared a noble art, worthy of Cyrus himself. Vegetius speaks in similar, Jackson in stronger terms, but perhaps unjustly: for if it is godlike to save many from suffering, and to carry them in healthy life up to the natural term of existence, it is a worthy occupation to rescue a few from the arms of death or incurable infirmity.

"But the preservation and restoration of health are parts of one science; and if, as has been done by London and Liverpool, health officers be appointed in all the districts of the kingdom, the art of preserving health will be studied by a high order of men, well paid by the public; and ultimately, with an increase of their remuneration,—the diminution of sickness, the disappearance of epidemics, immense advantage to the public,—the whole medical profession may devote themselves to the preservation and development of the vigor of the human faculties, instead of being tied down to the treatment of the sick and dying. 'And this,' Lord Bacon says, after his great survey of learning, 'we hope might redound to a general good, if physicians would but exert themselves, and raise their minds

above the sordid considerations of cure; not deriving their honor from the necessities of mankind, but becoming ministers of the divine power and goodness, both in prolonging and restoring the life of man; especially as this may be effected by safe, commodious, and not illiberal means, though hitherto unattempted. And certainly it would be an earnest of divine favor if, whilst we are journeying to the land of promise, our garments, those frail bodies of ours, were not greatly to wear out in the wilderness of this world.' "

In connection with these sentiments, in which we fully concur, there is another matter deserving investigation, which has as great if not greater influence on the sanitary condition of the people. We allude to the numerous incompetent, uneducated medical advisers, who are employed as curative physicians. We boast of living in an enlightened era of the world, and perhaps, when compared with many others, our boasting may be well founded. This age is indeed remarkable in many respects, and unlike any that have preceded it. The elements of progress that exist in its very constitution, hold out, for the future destinies of society and for the elevation of man, higher hopes than have ever before been entertained. Notwithstanding this general characteristic, there was never a period when ignorant pretension was more bold, or seemed to have greater patronage. We have, besides physicians educated according to the rules of some state medical organization, or some medical school, the homœopathic, the hydropathic, the analytical, the Thomsonian, the botanical, the eclectic and electrical, the mesmeric, the pathetistic, the electro-biologic, the chrono-thermal, the Indian, and very many other denominations of physicians, each putting forth their own system as the only sure one for the cure of all diseases. Looking superficially at all these classes, it would seem that at no period has medical practice been more unsettled. There are men of integrity and skill in these different denominations; but there undoubtedly exists in most, if not all of them, a vast amount of practice which is injurious, or does violence to health and life.

" An immense extent of suffering, of abridgment of human life, is regularly bought and paid for, among us. A market of

imposition is opened to supply the demands of ignorance; and this must continue to be so, until the people are more enlightened. Did the pretenders to medical science, who infest the country in such formidable numbers, confine themselves to the barbarians' practice of charms and incantations, the mischief wrought by their art would be far less deplorable; but accustomed as they are to more potent prescriptions, they commit wider havoc of human health and life, than the medicine-men of the savages themselves."[1]

It is not our intention here to discuss the causes which produce this characteristic of society, but to call public attention to it, that it may be examined, and its effects made known among all classes of the people. If the fatal consequences which result from the practice of those who deal in the human constitution and its diseases, and in the credulity and confidence of its possessors, as a trade merely, were truly exhibited, the disclosure would be startling. Men to whom human life and human health are intrusted, should know something of the natural constitution of the body, the operation of disease upon it, and the nature and effect of remedies; and they should possess common sense and experience sufficient to apply this knowledge skilfully to the almost infinite variety of forms and circumstances under which disease appears. Neither a blacksmith from his anvil, an hostler from his stable, a barber from his shop, or a woman from her wash-tub, can be supposed, without previous education or experience, even if "acquired from the Indians," to possess this knowledge, or to be qualified to act as a curative physician.

XLVI. We recommend *that physicians keep records of cases professionally attended.*

The science of medicine, like most other sciences, is founded upon facts. Many of these facts are stated in the recorded observation and experience of the profession, gathered up and handed down to us in the accumulated medical literature of the age. In anatomy and physiology, (and in surgery, too, to some extent,) branches of this science, truth and demonstration may be found; but in the practice of medicine more uncertainty

[1] Mann's Sixth Report of the Board of Education, p. 74.

exists. The great variety of diseases, and the infinite and ever-varying forms in which they appear in living individuals, render it very difficult to ascertain, always, what their exact natures are, or what appropriate remedies should be applied for their removal. And in looking over the history of medical practice, as exhibited in the books, it is curious to observe how many successive theories have been set up by one man or set of men, and have been overturned and demolished by another, or abandoned by the authors themselves. The cause of this great variety and change of opinion is to be found, either in an honest desire for the truth, and a belief that it has been discovered, or in a desire to introduce some new theory, that may attract notoriety and promise wealth to its advocates. This has given rise to the numerous medical systems and denominations which have existed and continue to exist. The great error has been in forming theories upon observations or statements, without duly inquiring whether they have been sufficiently numerous, and have been carefully and truthfully made, upon a uniform and comprehensive plan, or whether they are otherwise imperfect. Any theory, however plausible, resting upon a basis in which imperfection exists, is liable to be overthrown.

One great desideratum seems to be a *register of cases*, for private professional practice, constructed on a plan so simple in its requirements, so convenient in its form, at so low a cost, and so comprehensive in its design, that it shall commend itself to universal favor, and be universally used. If such a desirable end could be attained, means would be provided, which have not hitherto existed, to illustrate the causes, nature, effects, and treatment of disease. The abstracts of a large number of authentic registers, if properly presented to the public, would, it is believed, overthrow and destroy much of the medical theory and practice of the age, and introduce a more natural, rational, and successful system.

"The private register of the medical practitioner," says Mr. Farr, "would, at the end of a few years, be of incalculable benefit to him; he might refer back to it for important information, transmit it to his sons or successors in practice, analyze the results of his experience, and, in conjunction with his

brethren all over the country, would ultimately accumulate a large mass of materials, which could not fail to advance medical science. Too much need not be attempted at first; *all cases* should be noticed; but those facts should be chiefly recorded which are of an unquestionable nature, and that admit of precise statement and comparison, in respect to number, time, weight, and measure."

How shall this register be constructed? We have examined a large number of different plans, but none of them exactly meet our views. After consulting with several different physicians, whose opinions and approval are entitled to all respect, we propose one for adoption, a double page of which is presented and explained in the appendix. It may be afforded at a low price; and its form is such that it may be conveniently carried about by the practitioner, thus allowing him to have at hand the means of entering his observations *in the place* and *at the time* they are made.

Such a register would enable the physician to give the certificate of the cause of death, required under the registry laws, and also to give the amount of sickness suffered in any family he visits, as proposed to be obtained in our XXVth recommendation.

XLVII. We recommend *that clergymen of all religious denominations make public health the subject of one or more discourses annually, before their congregations.*

The American Quarterly Register, Vol. XII, for February, 1840, contains a plan for an Ecclesiastical Register, in which several forms for keeping records are suggested; and among others, one for the record of deaths which take place among the members of the church and congregation. The introduction into Massachusetts of a system of public registration renders some of the particulars there proposed to be recorded, unnecessary; yet it would be useful to any clergyman to know some facts concerning the history of every person in his congregation, and especially those who become or cease to be members of his church; and he should keep records for this purpose. The name, sex, date of and age at admission; date of dismission, of removal, or of death; cause of and age at

death,—are important to be recorded. It would enable him to give a history of human life, localized so as to include acquaintances and fellow-worshippers. The influence of sickness and death upon the congregation; the number who have died during the year; the increase and decrease of epidemic and other fatal diseases; the state of the public health of the town, of the State, and of the world; the laws by which physical life and health are improved; the wonderful plan of human organization; the incomings and outgoings of human existence; man's mortality, and its connection with immortality; the nature, design, and importance of sanitary measures, and their intimate relation to moral and spiritual life; and the various collateral subjects connected with these matters, are themes of absorbing interest, and cannot fail of suggesting the most useful and important lessons,—physical, social, moral, and religious;—and as such, they very appropriately come within the sphere of a clergyman's duty.

XLVIII. We recommend *that each family keep such records as will show the physical and sanitary condition of its members.*

Between the sanitary condition of families and of the State an intimate relation exists. What affects the former must of course affect the latter. And reform, if begun at all, must first commence in these primary communities. It is here that those great principles of sanitary improvement, which promise such favorable results, must first be adopted and developed. A system of simple but exact observations, concerning the physical condition and progress of the different members of the family, would greatly aid all concerned in the adoption of such a plan of management as would promote their highest welfare and improvement.

In 1841, a "System of Family Registration" was published, which contained, among other matters, blanks, for entering, in a simple and concise manner, some of the personal and physical facts concerning the members of the family. Among the blanks was one designed to exhibit some of the main facts concerning each child; another, the sickness suffered; another, the progressive development in weight and height; and another, the average physical and social condition, the increase, and

the longevity of the members of the families bearing one's own name, from whom descended, and with whom immediately connected. Six classes of facts were suggested, which might come under notice in the records, to be observed or omitted, as circumstances or convenience might dictate.[1] "1. Physical Facts; 2. Intellectual Facts; 3. Moral and Religious Facts; 4. Professional Facts; 5. Miscellaneous Facts; and 6. General Results." The design of these suggestions was, to obtain the physical and sanitary facts relating to genealogy.[2]

[1] The following are the headings of some of these blank forms. One of them covers two opposite pages, for making, on the left, a record concerning the father, and, on the right, concerning the mother; and, under them, the following particulars concerning the children :—

No. child.	Christian name.	Date of birth.	Place of birth.	Sex.	If married, to whom?	Date of marriage.	[BACK OF BOOK.]	Age at marriage.			Date of death.	Place of death.	Disease or cause of death.	Age at death.			Place of interment.	Remarks.
								Years.	Months.	Days.				Years.	Months.	Days.		

"Chart showing the progressive development in weight and height" :—

Name of person.	Period of observation.	Age.	Pounds weight.	Inches high.	Remarks.

"Chart showing the sickness suffered in the family" :—

Name.	Age.	Disease.	Cause.	Date of commencement.	Date of termination.	Days sick.	Name of physician.	Result.	Remarks.

[2] We select the following inquiries relating to the first class of facts :—

"I. *Physical facts.*—1. The height and weight of children at birth, and at the end of each three months, during the first year of life; also, the height, weight, and strength of the several members of the family, to be taken and recorded on each birth-day or new-year's day. 2. At what age and date began to walk alone and to talk; at what age attained the greatest height, weight and strength; and at what age began to decline. 3. Causes which promote or retard the growth of the body. 4. The color of the hair, the eyes, the complexion of the skin, the tone of the voice, or any other peculiar formation or expression, and whether they have been uniform through life. 5. The phrenological characteristics and developments of the different individuals, and of the same individuals at different ages. 6. In what respects the children, either in person or temperament, resemble the father, mother, or any other more distant ancestor or relative; and the peculiar temperament or propensity of individuals. 7.

The following facts are selected, as illustrations, from the entries concerning five families in Massachusetts,—A, B, C, D, and E,—in the table entitled "The Physical and Social Condition, the Increase and Longevity:"—

Subjects of Inquiry.	A.	B.	C.	D.	E.	Total.
Children in the families,	60	34	19	32	25	170
Male children,	31	19	11	16	13	90
Female children,	29	15	8	16	12	80
Males who were married,	29	13	11	16	10	79
Their average age at marriage,	24	25	25	28	27	25½
Females who were married,	25	11	6	13	9	64
Their average age at marriage,	24	27	24	24½	23	24½
Average births to each marriage,	7	7	5	7	9	7
Males whose ages at death were known,	23	15	9	10	6	63
Their average age at death,	65½	58½	76	66	68	65
Females whose ages at death were known,	6	11	6	7	2	32
Their average age at death,	65	57	46	55	58	55

This table shows, in the last column, that in the total of the five families named, containing 170 persons, 90 were males,

Effect of marriages between blood relations, and of other marriage connections; and of peculiar propensities of fathers or mothers on offspring. 8. Effect of peculiar diet, food, clothing, exercise, exposure, amusements, and occupation; of sedentary, active, and other habits of life; of climate, seasons, place of residence, and other external circumstances or influences, on physical developments, health, disease, and life. 9. Accidents which affect the body, the mind, and the general health; what they are, and the date and place of their occurrence. 10. When vaccinated, or had measles, hooping cough, or other epidemic diseases; the name, characteristics, and various forms of all diseases, the date of their commencement and termination, and their effect on the constitution; the length of time disabled by sickness, name of physician, and remedies used. 11. When eyesight or hearing began to fail, and the cause of failure. 12. The cause, place, and particulars of death."

As a further illustration of this subject, we have compiled from M. Quetelet's valuable work, "Sur L'Homme," the following table, representing the weight and height of males and females, in Belgium, at different periods of life:—

Ages.	Males.		Females.		Ages.	Males.		Females.	
	Feet high.	Pounds weight.	Feet high.	Pounds weight.		Feet high.	Pounds weight.	Feet high.	Pounds weight.
Birth.	1.64	7.06	1.61	6.42	14	4.90	85.43	4.77	80.94
1 yr.	2.29	20.84	2.26	19.39	15	5.07	96.40	4 92	89.04
2	2.60	25.01	2.56	23.53	16	5.23	109.55	5.04	96.09
3	2.83	27.50	2.79	26.00	17	5.36	116.56	5.10	104.34
4	3.04	31.38	3 00	28.67	18	5.41	127.59	5.13	112.55
5	3.24	34.78	3.20	31.67	20	5.49	132.46	5.16	115.30
6	3.44	38.80	3.38	35.29	25	5.51	138.79	5.17	117.51
7	3.63	42.98	3 56	38.63	30	5.52	140.38	5.18	119.82
8	3.81	45.78	3.74	42.68	40	5.52	140.42	5.18	121.81
9	4.00	49.95	3.92	47.10	50	5.49	139.96	5.04	123.86
10	4.18	54.08	4.09	51 87	60	5.38	136.07	4.97	119.76
11	4.36	59.77	4.26	56.57	70	5.32	131.27	4.97	113.60
12	4.54	65.77	4.44	65.77	80	5.29	127.54	4.94	108.88
13	4.72	75.82	4.60	72.65	90	5.29	127.54	4.93	108.81

The report on "The Physical and Moral Condition of the Children and Young Persons employed in Mines and Manufactories," contrasts the height and size of children employed

and 80 were females; that 79 males were married at the average age of 25½ years, and 64 females at the average age of 24½ years; that each marriage produced 7 children; and that the average age at death, of the males, was 65 years, and of the females, 55 years.

Another statement, compiled from a larger number of families, and inserted in the same blank form, exhibits the following facts:—In 306 families, containing 2,267 children,—1,197 males, and 1,070 females,—1,680, or 74 per cent., were married, and 587, or 26 per cent., were not married. Each marriage produced 7.3 children.

If similar observations, more or less extended, were made and abstracted, concerning a large number of families, the results might show, in a striking manner, the philosophical and statistical uses of genealogy, and could not fail to operate favorably upon the sanitary welfare of all concerned.

XLIX. We recommend *that parents, and others to whom the care of those in infancy and childhood are intrusted, endeavor to understand and discharge their duties so that a good foundation may be laid for vigorous manhood and old age.*

The management of infancy and childhood has an immense influence upon the health, vigor, and continuance of life; and the concurrent testimony of all intelligent men, who have examined the subject, is, that a great proportion of the debility, disease, premature deaths, and sanitary suffering, which are constantly occurring around us, is attributable to ignorance of the physical laws, and inattention to the physical wants, in the early years,—the formative periods of life. Debility, scrofula,

in mines and on farms. From this report, it appears that 10 collier boys, between 12 and 14 years of age, measured, in the aggregate, 44 feet 6 inches in height, and 274½ inches round the breast; while 10 farm boys measured 47 feet in height, and 272 inches round the breast. And 10 collier girls, between the ages of 14 and 17, measured in the aggregate 46 feet 4 inches in height, and 293½ inches round the breast; while 10 farm girls measured 50 feet 5 inches in height, and 297 inches round the breast. Other similar facts might be extracted from that report. They show that employment and external circumstances have an important influence upon human growth and development. Such facts, when derived from an extensive series of observations, are extremely interesting.

Records have been kept by some of the physicians, as they should be by all, in Massachusetts, of the height and weight of children at birth. From an exceedingly valuable paper "On the Statistics of Midwifery," by Dr. John G. Metcalf, of Mendon, published in the American Journal of Medical Sciences, Vol. XIV, for 1847, p. 295, we learn that of 836 children born in Mendon and vicinity, the average weight of 429 males was 8 lbs. 10 oz. each, and of 407 females was 8 lbs. each; and the average height of 242 was 19¼ inches. This shows a larger infant development than in Belgium, as indicated in the table.

consumption, and premature decay, as well as various epidemic diseases, are brought on and accelerated to their fatal termination, by neglect of a proper system of management from the very commencement of infant existence. If the history of the growth and development of the human body, of its parental management, and of the dangers to which it has been exposed at its early periods, could be truthfully made and spread before us, what a lesson would it give of the imperfection of human knowledge, and of the disobedience of those wise laws which the Creator has given for our guidance! From one-third to one-half of all the deaths in populous cities and villages, and about one quarter in all places, are those of children under five years of age. If the laws of health and life had been known and obeyed, this great sanitary evil might have been materially lessened, and thousands of lives might have been preserved, which have been lost.

This is a great, an all-important matter, and deserves to be thoroughly examined and carefully studied in all its bearings, by fathers and mothers, and those who expect to be fathers and mothers, as well as by nurses, governesses, teachers, and all others interested in the care of the young. The subject is too great, however, for discussion in this connection. Our purpose is merely to call public attention to it, as one of the sanitary measures in which there is great room for reform, and in which real reform would be immensely beneficial. There are many valuable works already published, which afford useful instruction on the subject. These works, the lessons of experience which the more aged and the wise might impart, and each one's own careful examination and reflection, might suggest systems adapted to different circumstances; the vital force of incoming generations might thus be greatly increased, and the life of many and many a useful citizen prolonged.[1]

L. We recommend *that individuals make frequent sanitary examinations of themselves, and endeavor to promote personal health, and prevent personal disease.*

If there is a fault in the printed discussions of sanitary re-

[1] "The Physiological and Moral Management of Infancy," by Dr. Andrew Combe, is one of the best popular works on the subject with which we are acquainted.

formers, it is in attaching too much importance to public, and too little to personal measures, for the promotion of health. The causes of disease may be diffused in the atmosphere, or may exist in a locality, or may be connected with the individual himself. If the person be well fortified and well guarded, little need be feared from an unseasonable invasion of the enemy from without; but if otherwise, its onset will be easy, and its victory certain. This is a matter in which uncertainty should, as far as possible, be excluded. We should not *guess* at the value of life, or the mode of preserving it. Every person should *know*, by his own observation and experience, his own capabilities and his own liabilities; and make the matter of preserving his health and continuing his life a subject of the same care and prudent forethought, and apply to it the same intelligence and sagacity, that he uses in any or all of his ordinary affairs.

Every person should make frequent sanitary investigations relating to himself. The history and condition of his constitution should be studied. The hereditary organization and tendency, and the character of the blood that courses in his veins, should be ascertained. The alterations of the original constitution, produced by disease, habits of life, or any other means, and the causes of these alterations, and the remedies that have been used to counteract and prevent their effects, should also be carefully studied and noted. The influence of various habits and actions upon the organs and functions of our bodies, whether relating to their protection, nourishment, or preservation, should be carefully observed; and such as are found to be favorable should be repeated, and such as are known to be unfavorable should be discontinued. Everything which may excite or develop an unhealthy tendency, hereditary or acquired, should, as far as possible, be avoided; and everything of an opposite tendency should be done to check such development.

Our persons should be *protected*, and kept in uniform temperature, by clothing of the right kind, properly made, and worn at such times, in such a manner, and in such quantities, as are best adapted to promote health. Disease should not be allowed to invade the system by means of too little or too much cloth-

ing, or through any other defect or imperfection; but each person should wear just such clothing, at all times, as will involve the least risk, and produce the greatest vigor and physical enjoyment.

Our persons should be *nourished* by food of the right kind, properly prepared, and taken at such times, in such a manner, and in such quantities, as will promote the greatest vigor. We should "eat that we may live, not live that we may eat;" take food to nourish us, not to satiate a depraved appetite; and adapt our food and our regimen, at all times, to the present physical and sanitary condition of the body. When debilitated and fatigued, we cannot take with impunity the same kind or quantity of food as when in a different condition.

Our persons should be *preserved* and *strengthened* by wise and uniform care and training. We should *cleanse* our persons by daily ablutions, properly applied, at suitable times, and of the right kind and temperature; *strengthen* our persons, physically and intellectually, by regular and progressive, not transient and excessive, exercise and labor, at such times, to such extent, and in such places, as will be most invigorating; and should *refresh* our persons by rest and sleep, at proper times, in right places, by suitable means, and in sufficient quantities.

What is right and suitable and proper, in each of these cases, must be determined by each one's own intelligence, observation, experience, feelings, and condition, ascertained by himself. If careful personal sanitary examinations were frequently made in this way, and personal health was guarded and improved by these means, we should hear less of the ravages of cholera, typhus, and other epidemics, and of isolated sporadic diseases.

IV. REASONS FOR APPROVING THE PLAN RECOMMENDED.

We have presented, in the preceding pages, some of the principal measures that have occurred to us as worthy of being embraced in a plan for a sanitary survey of the State, which we recommend for adoption. We might have included other collateral subjects, and might have given a more full explanation and illustration of those already presented, but the occa-

sion did not seem to require it or make it necessary. Our design will have been accomplished if our recommendations have been explained sufficiently to be generally understood and capable of being reduced to practical operation. We claim for the whole plan, and for each part of it in connection with the other parts, a careful consideration before judgment is passed upon it, and when so considered we have great confidence that we shall have the approval of all candid minds. We have already given, in the illustrations of the several recommendations, many reasons for their approval; and they are sufficient, it is supposed, to incline most intelligent minds in their favor; we might safely leave the subject here without further discussion. There are, however, some general considerations in favor of the plan which we deem it proper to present.

I. *It should be approved because it is* A PRACTICAL MEASURE.

The great *outline of the plan* is the establishment of a Central General Board of Health for the whole State, and a Local Board of Health for each city and town in the State; each to be composed of competent men, who are to have the general superintendence of all matters relating to the public health within their respective jurisdictions. These Boards, having the assistance and coöperation of the people in all parts of the Commonwealth, would be able to bring to bear, by a practical, systematic, uniform, and efficient plan, a vast number of minds and a great amount of intelligence upon the subject of health, and upon the causes and prevention of disease; and it is impossible to foretell the immense advantages which might result from the facts they might collect, and from the discoveries they might make, relating to the number of lives saved, the prolongation of the periods of human existence, and the diminution of human suffering.

In the preparation of the plan, we have desired, on the one hand, to avoid too much, and on the other too little complication and detail. The proposed act, which is the main legal foundation of the plan, is designed to occupy the middle ground between these two extremes. It contains no provisions which seem to us unessential, and it is designed to contain all such as are necessary. So important a matter cannot be provided for by a few general sections. It must be made clear

and simple; and considerable detail is required for this purpose, otherwise it cannot be understood, and easily introduced into all the towns in the State. It is believed that if the act were passed and put into operation by such Boards of Health as might and ought to be appointed under its provisions, nothing would be required but ordinary intelligence and attention to make it successful, and this every measure must have or it will be useless. If this act should become a law, several of the recommendations *must* be carried into effect; others may or may not be, as circumstances may render it necessary or expedient. The XIIth, XIIIth, XVIIth, XXXIst, XXXIInd, and XXXVIth, would require additional legislation to carry them into operation. The recommendations relating to social and personal matters are designed for the general good, and come in aid of the others without special legislation. They may or may not be adopted, according to the inclination of those interested.

And what is the design, what are the purposes of this measure? What will it probably accomplish, if carried into execution?

It would save life. It has been well said:—"In England alone, the average annual number of deaths from disease is, in round numbers, 300,000, while that of deaths from the mere decay and exhaustion of the human frame by the progress of time, is only 35,000. In the difference between these two numbers we see the vast and vital field in which the sanitary reformer proposes to work. That disease shall ever be entirely exterminated, is of course beyond the belief or hope of the most sanguine. But every disease has somewhere its specific and efficient cause,—and that these causes can be removed or much weakened in their action, in very many instances, is not only within the bounds of hope, but has been satisfactorily proved. When sanitary legislation gives us its successful results, they will be represented by the reduction of the number of those who die of disease in their early days, or in the prime of life—and in the increased number of those who have completed their allotted course in health, and been peacefully gathered to their fathers. Accordingly, sanitary improvements have not directly in view the extension of the *natural* period of

human life, but only the removal of influences which *artificially* curtail it."[1]

Similar illustrations may be derived from observations among us. In Massachusetts, during the seven years covered by the Registration Reports, 64,510 deaths, in all the counties except Suffolk, were recorded and returned to the office of the Secretary of State; and of these, 4,414, or 6.84 per cent. only, are recorded as having died of old age, and 93.16 per cent. from diseases and other causes.

In Boston, during thirty-nine years, 1811 to 1849 inclusive, 62,431 deaths took place, of which 2,079, or 3.33 per cent. only, were from old age, and 96.67 per cent. from diseases and other causes; and for the year 1849 it appears still more unfavorable, being 5,079 from all causes, and 95, or 1.87 per cent. only from old age, and 98.13 per cent. from other causes. Is it not a practical measure to prevent some of this great amount of disease, and assist some of these lives that they may grow old, and die only because they *are* old?

We have constructed and given (p. 82) a very important table, showing the law of mortality for Boston, at three different periods, and also for a district of the average health of the country towns in the State. By this table it appears that $1\frac{1}{2}$ per cent., or 1 in 67 of the population, is about the average rate of mortality for the interior healthy towns in New England. In some towns it rises above and in others falls below that rate; but that may be assumed as a healthy standard. This is nearly the rate of the healthy districts in England. It also appears that in Boston, during the last nine years, the proportion of deaths were, on the average, 2.53 per cent., or 1 in 39. And by the report of the City Registrar they were, in 1849, at the rate of 3.84 per cent., or 1 in 26 of the estimated population of 132,000. If Boston had suffered an annual loss by death of $1\frac{1}{2}$ per cent., equal to the average healthy country towns, instead of 2.53 per cent., there would have been on the average for the last nine years, 1,715 deaths annually, instead of 2,903; showing an excess of 1,188 unnecessary deaths annually. And by applying the same rule to the year 1849, it

[1] Edinburgh Review, Vol. XCI, for Jan. 1850, p. 210.

will give 1,980 deaths only, which should have taken place, instead of 5,079, showing an excess, for that year alone, of 3,099 unnecessary deaths! and this is on the supposition that the rate may remain at $1\frac{1}{2}$ per cent., when it is believed to be possible to raise the public health to a state even better than that. What Boston suffers, in so great a degree, is suffered, to a greater or less extent, in all places, city and country. Very many country towns suffer great unnecessary mortality; and is it not a practical measure to prevent as much of this excess of deaths as possible?

It would prevent sickness. We have stated that the estimated rate which sickness is supposed to bear to the population is double the rate per cent. of the annual deaths. This rule, if applied to our population, would indicate, in the opinion of some, too much, and of others too little sickness. But assuming it to be nearly the average, until we get more perfect returns, let us make the application. The average number sick during the whole year, in a healthy country town, is $(1\frac{1}{2}\times 2)$ 3 per cent. of the population; and in Boston for the last 9 years (2.53×2) 5.06 per cent., and for the year 1849 (3.84×2) 7.68 per cent. According to this rule, if Boston had suffered no more than a healthy country town, she would have had but 3,960 persons constantly sick, or suffered that number of years' sickness in the aggregate, instead of 9,837; showing an excess of unnecessary sickness, for that year only, of 5,871 years!

Applying the same rule to the country towns, it will show an immense though not so great a proportion of unnecessary sickness. Estimating the population of the State at 800,000, and assuming it to enjoy a healthy standard, there would be 12,000 deaths annually, and 24,000 persons constantly sick. But the deaths returned in the counties other than Suffolk, were 11,346 for the year ending May 1, 1848, and very many were not returned at all. An abstract of the returns of deaths for 1849, has not yet been made, but when it is made we have no doubt that it will show an annual mortality as high as $2\frac{1}{4}$ per cent., or an excess in the whole State of 6,000 unnecessary deaths, and of 12,000 years of unnecessary sickness!

It would increase the vital force. We have presented the

loss of life and the amount of sickness as two of the great evils which the people suffer. Another is found in the vast amount of impaired health and physical debility which exist among those not actually disabled by sickness. Many, very many, move feebly about, discharging imperfectly the great duties of life, and have not the capacity to perform the labor which perfect health allows.

"The aggregation of all the physical powers, the original organization, the united energies of the nutritive, respiratory, cutaneous, locomotive, and nervous actions, and the predominance of the vital over the chemical affinities, coöperate in the production of *vital force;* and these together make up what is commonly called the *constitution* of man,—that is, his power for labor or endurance,—his power of accomplishing his purposes, or resisting the causes of injury.

"This constitution, or this quantum of vital force, may be considered as the *capital of life,* with which man operates, does all his work, enjoys all his pleasures, and sustains himself in his present being.

"Some few persons have only vital force sufficient to barely sustain life. They can digest their food, and perform the other functions necessary for the replenishment of the exhausted powers, and no more. They can only keep their vital machines in operation. But most persons have more than this. After supplying their natural wants, and raising the power of the machine to its highest healthy point, then deducting all the vital force necessary for these from the whole constitutional force, there is in them a surplus of energy left to be disposed of otherwise; and this may be expended, at their own will, in actions of the muscles or of the brain, for profit or for pleasure.

"If the constitutional power is considered as the capital of life, this surplus energy may be considered as the *income of life.* This may be expended daily, and yet leave that capital unimpaired. But this expenditure must be limited, in each day, to the quantity of vital force that is generated by each day's nutrition, and each night's sleep.

"This constitution, or quantity of vital force, must necessarily differ in different persons, and in some it differs very widely.

There are differences in the primordial elements, in the original organization, in the distribution of strength through the several organs, in the tenacity of the vital principle, and in the early development of the powers.

"There are also differences in the subsequent management of the system, and in the appropriation of the surplus energies. The animal organization is first determined by the Creator; the constitution is next developed by those who have the care of childhood and youth, and then it is entrusted to the hands of man himself, for preservation and for use. The Creator does not retain absolute control over the organs, nor has He endowed them with a certain and irresistible force, by which they shall supply their own wants, perform their functions, and regulate their actions in the manner which is best for the whole. All of these admit of various degrees; and, in this broad latitude, each one must seek out for himself that degree which is best, and determine what degree shall be allowed."[1]

Here then is the immense field to which our measure applies. Its purpose is to reduce this great number of deaths, to prevent this vast amount of sickness, and to raise the general standard of health as high and even higher than that of the most healthy districts; and this it proposes to accomplish by giving to the legislature an exact knowledge of the condition of the people; by the passage of useful laws for the promotion of their welfare; by giving to the physician a better knowledge of the causes and prevalence of diseases, that he may better adapt his remedies to their prevention and cure; and by diffusing among all classes of the people facts concerning life and health, and the general principles of sanitary science, and by leading them to make progress in sanitary improvement.

We do not suppose, if our measure should be adopted, that these great improvements will immediately take place, neither do we suppose that the time will ever come, let our sanitary regulations be ever so well matured, when no human being will die of any other cause than old age,—the wearing out of the human machine. But what we anticipate is, a gradual sanitary improvement, a gradual removal and avoidance of the

[1] Dr. Jarvis's Address, Communications Mass. Med. Soc., p. 4.

causes of disease, a gradual diminution of human suffering, and a gradual reduction of the number of premature and unnecessary deaths. And there can be no objection to aiming at abstract perfection, and to continuing our efforts at reformation until it is attained.

That our measure *will accomplish what it proposes*, if put in operation, there is abundant evidence in the history of sanitary experience. The recorded facts concerning the causes of disease, and concerning disease itself, in all ages and in all countries, prove it.

Sanitary improvements in England first began in the navy. It is observed in a Sanitary Report, that "so dreadful was once the condition of the Royal Navy, that in the year 1726, when Admiral Hosier sailed with seven ships of the line, to the West Indies, he buried his ships' companies twice, and died himself of a broken heart. Amongst the pictures then presented, as in 'Anson's Voyages, 1740–44,' were those of deaths to the amount of eight or ten a day in a moderate ship's company; bodies sown up in hammocks and washing about the decks, for want of strength and spirit on the part of the miserable survivors to cast them overboard. Dr. Johnson, in the year 1778, thus describes a sea life:—"As to the sailor, when you look down from the quarter-deck to the space below, you see the utmost extent of human misery; such crowding, such filth, such stench! A ship is a prison, with a chance of being drowned—it is worse, worse in every respect—worse air, worse food, worse company.'"

In 1779 the proportion of deaths in the Royal Navy was 1 in 8 of the employed; in 1811 the proportion was 1 in 32 of the employed; and from 1830 to 1836, the average number of deaths annually was 1 in 72 of the employed. And in this calculation the deaths from all sources are included,—from wounds, drowning, and all other external causes, as well as from disease. From the latter source the deaths were in proportion of 1 in 85 of the number employed annually. "These figures are eloquent beyond any words that can be employed. They excite, as they are fitted to excite, especially at first sight, our wonder. They ought, however, to occasion more of gratitude than

astonishment, because the causes of the difference are not difficult to determine, and because almost all that appears in favor of recent times is due to the superior intelligence and humanity infused into the administration of the navy."

Equally good effects have followed the sanitary reforms in the British army. The mortality among the British troops at Hong Kong, in 1842, was at the rate of 19 per cent., or 190 in 1000; in 1843, it was 22 per cent., or 220 in 1000; and in 1844, it was 13½ per cent., or 135 in 1000. But during these years, the garrison was very badly accommodated; in 1845 their accommodation was greatly improved, and the mortality diminished to 8½ per cent., or 85 in 1000; and since that time, the troops having been lodged in what may be termed from their excellence, "model" barracks, their mortality at once dropped down to 2½ per cent., or 25 in 1000; a rate not much exceeding that of stations esteemed healthy. Since the adoption of the measure proposed by Dr. R. Jackson, of removing the troops stationed in the West Indies to cantonments on the mountain ranges, the diminution in the rate of sickness and mortality has been such as to justify the assertion, that if this measure had been carried into effect at the time it was first urged by him, the lives of from 8,000 to 12,000 men would have been saved,—a sufficient lesson, one would think, to our authorities, not to *delay* the introduction of improvements which experienced medical officers concur in urgently recommending.

The subjoined facts relate to the comparative mortality of cities and other places, under different sanitary arrangements:—

"The following table displays the relative mortality in the different parts of the Bolton Union, calculated from an average of five years; showing also the annual excess of deaths above the standard rate of 2 per cent., or 1 in 50, to which, as we have formerly shown, it is next to certain that the mortality even of large towns might be reduced by proper sanitary regulations.

Townships.	Pop. in 1845.	Deaths per an.	Mortality pr ct.	Or one in	Excess over 2 pr ct.
Great Bolton,	35,914	1,313	3.65	27.39	595
Little Bolton,	17,251	485	2.81	35.38	140
Out Townships,	51,043	1,119	2.19	45.66	86

"Thus the mortality of Great Bolton is greater than that of Sheffield, which hitherto enjoyed a bad eminence in this respect; and out of a population of about 36,000, nearly *six hundred*, or 1 in 60, die unnecessarily every year. What should we think of an annual sacrifice of one out of every sixty of our population, to satisfy the cravings of some insatiable monster like the Minotaur of old? Should we not put forth every effort, and be ready to sacrifice all our worldly possessions, to avert it? And yet this sacrifice is in effect offered up every year in Great Bolton to the Ogre *filth*. The fact is too plain to be gainsaid."[1]

We extract from an article on "Cholera and Sanitary Reform," in the work from which the last paragraph is taken, Vol. IV, for Jan. 1, 1850, the following passage:—"Let us endeavor to realize this astonishing fact. A disease has lately crossed over these countries, which, in our metropolis alone, has swept away 15,000 souls. We have lost in all Britain more lives than we have lost in battle since the days of Marlborough. And, looking at the matter in a mere worldly sense, who can know the incalculable value of many of these lives? Every man instinctively pictures to himself how much misery and lasting grief and sorrow this great mortality symbolizes. It requires no stretch of imagination to realize a great national calamity, of which the actual deaths are but the smaller items. Behind each death we can trace easily the anguish of the living; the distress of those left fatherless, husbandless, childless; the hopes blighted; the ties broken; the companionship and sympathy forever destroyed. A thousand mental pangs, and among the poor, a thousand bodily hardships, are the legacies and sad memorials of every death. Callous and cold-hearted indeed must he be, who can turn aside from such a record, without seeking to probe this national wound, and to demand whether there is no healing force whereby its bleeding surface may be staunched. In the midst of the general distress, a set of men come forward to say, that they have found a plan for preventing the recurrence of this frightful slaughter. These men are no enthusiasts, but are the persons who, of all others, by education and

[1] British and Foreign Medico-Chirurgical Review, Vol. II, for October, 1848, pp. 509, 510.

experience, are best able to know the truth of their assertions. The whole medical profession announce, that they can prevent, if means are given them, the recurrence of this mortality and suffering. Are these men worthy of credit or are they not? If they are, then where is the government, where is the nation, that can disregard this assertion,—that can blindly shut its ears to those groans of anguish, the echo of which has not yet died from our affrighted air,—and, careless of the future, can see with indifference the inevitable recurrence of that fearful drama which, in a few short years, must be again repeated?"

Authentic facts and well founded opinions like these, abound in the various English works on sanitary improvement. Similar opinions, founded upon well established facts, also exist in our own community. There can be no doubt, in any unprejudiced mind, of the practicability of the measure.

In 1842, the Hon. Horace Mann, as Secretary of the Board of Education, proposed to several physicians, the following question:—"How great a proportion of disease, of suffering, of diminution of physical capacity, of usefulness, and of abridgment of life, comes from sheer ignorance, and which, therefore, we might hope to see averted, if the community had that degree of knowledge which is easily attainable by all?"

To this question Dr. James Jackson, of Boston, replies,—"I feel assured that the answer should be—*more than one half.* When it is brought to mind that the ignorance of parents is included in the terms of the inquiry, the justice of the answer will probably be admitted by all who are conversant with the subject."

Dr. S. B. Woodward, late superintendent of the State Lunatic Hospital, says, "I have no doubt that *half* of the evils of life, and *half* the deaths that occur among mankind, arise from ignorance of the laws of health and life; and that a thorough knowledge of these laws would diminish the sufferings incident to our present state of being in very nearly the same proportion."

Dr. Edward Jarvis replies,—"From an observation of thirteen years, I have been led to believe that *three fourths, perhaps more*, of the ailments of men come from a want of sufficient knowledge of their frame, or a disregard for it."

Dr. Marshall S. Perry, from a special record, estimated that *more than half* of a given number of cases of sickness, might have been avoided, by knowledge, attention and care.[1]

The opinions of a large number of professional men with whom we have had personal intercourse, fully coincide with those here recorded; and we are led to the startling conclusion that *half of all the diseases and half of the deaths* that take place might have been avoided! It is unnecessary to bring further proof of a truth so well established. There is scarcely any person who, in a retrospect of his own life, cannot remember instances of sanitary suffering in himself, which he might have avoided had he understood and observed the laws of health and life. Our measure then is not a visionary, theoretical abstraction, but a simple, everyday practical reality, universally comprehensible, and applicable to all persons, in every place, and at all times.

II. *It should be approved because it is* A USEFUL MEASURE.

If the important practical results which have been detailed, would follow the adoption of our plan, it is unnecessary that anything further be said to show that it is a useful measure. To save life, to prevent sickness, and to invigorate the human frame, are its objects; and none can be of greater utility.

It would give the State a knowledge of its inhabitants. Hasty legislation, based upon imperfect knowledge, is one of the evils of this republic. It prevails, to a greater or less extent, in all the legislatures, national, state and municipal. It is the practice of some governments, when measures deemed worthy of legislation are proposed, to appoint a commission or committee to make a thorough investigation of the whole subject, and to report the facts and the evidence. A bill is then carefully drawn, based upon the facts thus disclosed, and adapted to the exigencies of the case. This is enlightened, effective, useful and economical legislation. England is much indebted for her greatness and power to this practice; and her example, in this respect, is worthy of imitation. The very reverse of this, however, too often happens in the United States. We too often legislate first, and obtain the facts, if we obtain them at

[1] Mann's Sixth Annual Report, pp. 84, 85, 88, 89, 97.

all, afterwards. An exact knowledge of the circumstances of the people, is the surest basis for correct and useful legislation.

It would aid the physician. This would be done in various ways. The information obtained would be of immense consequence in giving him exact knowledge of the *causes* and prevalence of different diseases. This knowledge would greatly aid him in applying his remedies for prevention and cure. Instead of partial facts, obtained for a partial purpose, upon which to ground his theories, he would have a vast collection of impartial facts, truthfully gathered, for no other purpose than the promotion of truth. On such a basis he might construct a much better theory in medicine, and devise a more rational, philosophical system of remedies.

But there is another purpose which they would secure in this relation. One of the most trying circumstances in the life of a conscientious physician, is believed to be the capricious and unfounded judgment which the people often pass upon his skill and professional services. This opinion is frequently the result of accident or prejudice, combined with imperfect knowledge or entire ignorance, and would be changed if the people were better educated in sanitary science. This is an interesting consideration, and might be abundantly illustrated in the experience of every physician; but the mere suggestion is deemed sufficient for our purpose, to show that this is a useful measure to the medical profession.

It would benefit the people. We have already alluded to the murderous imposition which is practised upon a credulous people, by pretenders to medical skill, in curing disease, and by mercenary dealers in injurious nostrums and drugs. This matter may be again alluded to for a more general purpose. Though health is a matter in which every person is directly interested, yet there is scarcely any subject on which so much ignorance generally prevails. When well enough to do without medical advice, we are too apt to neglect to inform ourselves as to the means of avoiding the contingency of sickness. But when attacked with real or imaginary sanitary ills, no people are more liable to err, or can be more easily imposed upon. The body is subjected to experiments, by new advisers and

new remedies, come from whatever quarter they may; and faith is put in certificates, which perhaps have been forged. Many, very many, are thus drugged to death, either by the blind guides of their own uninformed minds, or the unfounded pretensions of others. The object of this measure is to diffuse, among all classes of people, more enlightened views of life, health and disease. In this way it is believed numerous lives might be saved, a great amount of sickness prevented, and a corresponding amount of suffering avoided. Is not this a useful purpose?

III. *It should be approved because it is* AN ECONOMICAL MEASURE.

The expense of preventive sanitary measures is the most common argument brought against their adoption. Epidemics are considered by the ignorant as evils which it is useless to attempt to prevent; and among the better informed, a false idea of economy, which has sometimes led to the most fatal results, has been the ground of resistance to measures which were necessary to save life. It should, however, be known that public expenditures cannot be avoided during the prevalence of an epidemic disease. Money must be spent, either in saving life, or in the maintenance of pauperism, widowhood, and orphanage. In this case economy is on the side of humanity, and the most expensive of all things is—to do nothing.

Debility, sickness, and premature deaths, are expensive matters. They are inseparably connected with pauperism; and whenever they occur they must, directly or indirectly, be paid for. The city or town must pay for the sick man's support—for his food and clothing, for medical attendance on him during life, and for the support of his widow and children (if he leave any) after his death. A town in which life is precarious pays more taxes than its neighbors of a different sanitary character. An individual who is unable to perform a large amount of labor or no labor at all, is a less profitable member of society than one who can do whatever vigorous health allows.

"It is for the interest of the public at large, no less than for the happiness of the few immediately interested in each human being, that the life once breathed should, if possible, be pre-

served, until it is released by the natural wearing away of its earthly tabernacle. We all know that, in the common sense of the term, a short-lived population is generally a surplus population,—not only because those who are reckless of preserving life, will be careless of all its obligations, and will be poor and vicious, but because the tendency of early deaths is chiefly to shorten the existence of those who produce more than they consume, and to increase the number of those who must be dependent on the charity of others. 'A cholera widow' is a significant expression occasionally used by the Board of Health, to indicate one who has been thrown on the parish by the death of that husband who, if he had not been prematurely cut off, might have supported her for years, and left his children old enough to earn bread for themselves. Many communities are now thus paying, in alarmingly swollen poor-rates, for the short-sighted selfishness which made them grudge the cost of precautionary arrangements." [1]

As an illustration, the proportion of deaths by cholera, in two parishes in England—Hampstead and Rotherhithe—have been stated. In the latter, 225 persons died of the disease in every 10,000 inhabitants, while in the former 8 only died. At Rotherhithe, out of 225 persons, 217 died of preventable causes. "There were in that place, 28 times the proportional number of deaths that there were at Hampstead, 28 times the cases of sickness, 28 times the number and cost of funerals, 28 times the doctors' bills, and 28 times the proportional number of widows and helpless children to be supported by somebody." [2]

As a further illustration we present the following extract from a speech delivered by Lord Ashley, at a meeting held Feb. 5th, 1850, to take into consideration the sanitary condition of the metropolis :—

"At least one third of the pauperism of the country arose from the defective sanitary condition of large multitudes of the people ; and he had no hesitation in saying, upon the authority of experienced persons, that if the population of their great towns were placed under proper sanitary regulations, in less

[1] Edinburgh Review, Vol. XCI, January, 1850, p. 212. [2] Do. for April, 1850, p. 389.

than ten years the poor rates would be reduced £2,000,000 annually. What had been the effect produced upon the parish of Lambeth by the ravages of the cholera, a large proportion of which might have been prevented by suitable sanitary measures? He had the official return of the number of persons becoming chargeable to the parish in consequence of deaths from cholera between the 16th of June and the 16th of October, 1849. There were—orphans 310, widows 74; total 384 persons. There was a village in Wiltshire with a population of 510; in this village four widows and 16 orphans, making a total of 20 persons, had become permanently chargeable. A still more remarkable instance occurred in another village, containing 54 inhabitants. Of these, 19 had been carried off by cholera, and their families had become chargeable upon the rates. Let it be observed, that if the attack of cholera in London had been in proportion to the attack in that village, 500,000 persons would have been carried off; but he quoted these instances of the ravages of the epidemic to show that what cholera did rapidly and by fits and starts, typhus and other fatal diseases were doing slowly day by day. If the cholera had sent 1,000 orphans and widows to the poor-house in a few weeks, typhus was permanently sending hundreds and thousands there, to become chargeable upon the rates payable by those parties who, if they had been wise and humane in time, might have obviated all fatal consequences and been the means of preserving the existence of many worthy and honorable citizens. Of all the agencies which predisposed the human body to disease, none were so fatal as over-crowding in small dwellings. There had been remarkable instances wherein localities ill drained, badly ventilated, and exposed to noxious influences, had continued without a visitation from the cholera, whilst a building where the inmates were well fed, well clothed, and had every appliance to keep them in health, with the single exception of over-crowding, presented a mortality greater in proportion than the awful mortality among the pauper children at Tooting. Under such circumstances it was impossible any particular class could insure immunity from disease. The deaths from cholera in London amounted to 16,696. Of these

72 per cent. occurred among the poorer classes, 16 per cent. among the middle, and 3 per cent. among the upper classes; but he reminded the middle and the upper classes that the expenses inflicted upon the community in the metropolis, during the late epidemic, amounted to no less than £1,060,096, including the cost of funerals, medical attendance, and the loss of reproductive labor. It might be asked, was this instructing the people? He did not say it was; but what they were doing in bringing such facts before the public was an indispensable preliminary to their moral and spiritual welfare."

The expenses and losses entailed by a neglect of sanitary measures may be classed under the following heads:—1. Expenses imposed upon the poor, by loss of work or of situations, for medical attendance and medicine, for nursing, for funerals, for the support of widows and orphans, and for other purposes. 2. Expenses imposed upon the tax-payers, for the support of those who are unable to support themselves, besides their own increased expenses arising from a bad sanitary condition. 3. Burdens imposed upon the charitable, for the support of hospitals, dispensaries, and for other more general or special charities. 4. A loss sustained by the state, in consequence of the diminished physical power and general liability to disease. 5. Expenses imposed upon the community, by the crimes arising from the unfavorable physical circumstances by which the laboring poor are surrounded, and which lead with certainty to their moral degradation. Various estimates have been made of these expenses, some of which, as stated by Lord Morpeth, we have already noticed, (p. 44.)[1]

[1] We extract from the Report on the Condition of Large Towns, the following illustrative passage from the testimony of Dr. Taylor, an intelligent surgeon of London:—"Amongst others was the family of a policeman whom I attended. When he applied for relief, the observation which occurred was, 'You have, as a policeman, 20s. a week regular wages, and other advantages; you are never out of work, and cannot be considered a proper object of relief from the funds of a dispensary intended for the poorest class?' His reply was, that he paid for his miserable one room, divided into two, 5s. a week; that he had 1s. 3d. weekly to pay for keeping up his clothes, which reduced the money he had for his family of four children and his wife to 13s. 4d.; that he had had all his children ill, and lost two; that he had during three years paid six doctors' bills, principally for medicine, at the rate of 2s. 6d. a bottle, amounting to between £30 and £40; that two of the children had died, the funerals of which, performed in the cheapest manner he could get it done, had cost him £7: the wife and his four children were now ill. They were so depressed and debilitated, as to render them very great objects for the dispensary and the Samaritan Fund. All this misery was traceable to preventable causes. Take another case in the list before me. A porter, in regular employment, at wages producing £1 a week: he paid 3s. 6d. for a most miserable and unwholesome room, in which himself and six other people, four children and three adults, slept; the children were shoeless, extremely filthy, and badly clad; the wife ill in bed of a

Attempts have been made to show the pecuniary advantages which would result to Massachusetts by the adoption of an efficient sanitary system. The subjoined is given as an estimate, which we believe would fall far below the reality. The number of unnecessary deaths the past year, has been estimated (p. 245) at 6,000, and of cases of unnecessary sickness at 12,000. This is a direct pecuniary loss to the State. If each of these 6,000 persons had been saved, and had lived 18 years, which may be taken as the average length of the labor-period of life; or if the whole 18,000 persons who died in the State, could have lived, on the average, six years longer than they did, (and who will say that they might not more than that period?) then we have 108,000 years of lost labor on their account, which may fairly be estimated at $50 each per annum. The cost of 12,000 years of unnecessary sickness may be estimated at $50 each, and the lost labor of the sick at $100 each.

diseased knee, for which I attended her; two children had been still-born, and he had lost three others; the sickness of one of these children, which had died at fourteen of consumption, had cost him in doctors' bills 16 guineas; the sickness of the one which died eleven months old, of water on the brain, had cost him £6; the third had died fourteen days old. The expenses in the three cases had so impoverished him, that he was compelled to apply to the parish for aid for their burial. I will submit a third case—that of a cook, in receipt of 25s. per week regular wages. He was living with his wife and three children in a small, close, ill-conditioned room, for which he paid 5s. per week rent. He complained that the water was always 'thick,' and very disagreeable to the taste, and the smells from the sewers and the drains in the house were very bad: he had five children, of whom two had died; that he had paid doctors' bills for his wife's confinements £5 each; and for one child which died of scarlet fever, at four years of age, the doctor's bill was £4 18s.; the one which died of debility, at the age of ten weeks, cost him £1, 10s.; the funeral of the eldest child cost him £3; and the one at ten weeks, £1, 10s. He showed that the expenses of confinements, the doctors' bills, and the undertakers' bills, and the illness of his wife, arising from five miscarriages, had so impoverished him, that having now two children ill with scrofula, he was obliged, though reluctantly, to apply to the dispensary for relief. The last case I will submit to the commissioners is that of a shoemaker, a good workman, who earns 20s. a week: he pays 5s. a week for one small, miserable room, in a narrow court; he has had seven children, of whom he has lost five, for which he has paid in doctors' bills between £2 and £3 each; the expense of his wife's confinements amounted to £3, 15s, each; the expenses of the funerals of the five children were between £3 and £4 each: his wife's age was thirty-two, his own age thirty-seven, and at this age of thirty-seven he continually suffered from nervous depression; and having one of his two other children with a lingering disease—a scrofulous affection of the hip—he was compelled to come to the dispensary: he complained that the water of his house was never clear, and never sweet. A man in receipt of 30s. per week's wages, considering his amount of rent which was 5s. 6d. for one room, for himself, wife, and three children; having had four deaths after lingering consumptions, and a wife and children never well, I felt that he also was a proper object of the charity. At the time I visited these 100 families, no less than 212 of the members were suffering under disease manifest in various stages. They had already had no less than 251 deaths and funerals, and a corresponding amount of sickness. It was only in a late stage of my investigations that I began to see the very serious amount of miscarriages they have had, and which in many instances exceed the deaths. Three hundred and fifty of the members of these 100 families were dependent children, whose average age was little more than ten years."

Henry Austin, Esq., in his Report on the Sanitary Condition of Worcester, (p. 40,) says the attacks of fever appear to commit the greatest ravages among those in the vigor of life; and to one fatal case there is at least 10 attacks. "An insurance charge for the mitigation of the effects of sickness and premature mortality for an average family, is more than three times the annual cost of the outlay for the whole of the intended works at Worcester," sufficient to place the city in a good sanitary condition.

Then there are the public paupers, widows and orphans, made so by the premature deaths of relatives, which cannot be estimated at less than 6,000, at $1 per week. According to this calculation we have—

Loss of 108,000 years of labor, at $50 per annum,	$5,400,000
Cost of 12,000 years of sickness, at $50 " "	600,000
Lost labor of the sick, at $100 " "	1,200,000
Cost of supporting 6,000 widows and orphans, at $52 per annum,	312,000
Total annual loss,	$7,512,000

There are other expenses and losses which might be avoided. The General Board of Health, by their superior sources of information, would be able to suggest to the local Boards of Health, and to others interested, the best arrangements and regulations for different objects of sanitary improvement; and many expenses now incurred for want of such information would be avoided. Many works, public and private, have been constructed at great expense, which are nearly worthless in a sanitary view, and might have been dispensed with if a better plan had been known. It has been well said "that it costs more money to create disease than to prevent it; and that there is not a single structural arrangement chargeable with the production of disease that is not in itself an extravagance."

And *what would be the expense of the measure?* If the act we propose should become a law, the expenses of the General Board of Health must be provided for by the State; and they would be nearly as follows, annually:—

For the salary of the Secretary of the Board, say -	$2,000
For contingent expenses, including the expenses of the Board, printing, stationery, &c. - - -	1,000
Total, - - - - - - - - -	$3,000

The services of the clerks in making abstracts of a census of the inhabitants and of the returns under the registration system, and for other services, would cost no more, if prepared under the direction of the Board, than they now cost in the

office of the Secretary of State. This then would be the whole expense to the State; and in the cities and towns which now have a Board of Health, and do anything for the sanitary welfare of the inhabitants, no more expense would be incurred for the same service than is now paid.

This would be a wise expenditure of money. According to the estimate above presented, the State suffers, from its imperfect sanitary condition, an unnecessary annual loss of more than 7½ millions of dollars! and this arises, partly at least, from the non-adoption of a measure which will cost but about $3,000. If saved, it would add that amount to the wealth of the State, besides the indefinite amount of increased happiness which would accompany it. Should any one consider this an extravagant estimate, let him reduce it to 3 millions, more than one half, and then the relation of expenditures to the savings, or to the income, will be as *one dollar* to *one thousand dollars!* And even if nine tenths of this latter sum be deducted, it will be like paying out *one* dollar, and receiving back again *ten*, as the return profit! What more wise expenditure of money can be desired?

Look at the able report of the State Auditor for 1850, and compare it with any expenditure of the State, or compare it with any measure that has been introduced for consideration, and few, if any, can be found of greater expediency, propriety and usefulness, or that will contribute more to the prosperity and welfare of the people of the Commonwealth. Massachusetts "has required annual returns of information to be made and published, concerning pauperism and crime, banks and insurance companies, agriculture and other matters. She has indirectly offered premiums for the best farms, and the best farming productions; the best implements for manufactures, and the best articles produced; and has paid to agricultural societies, for these objects, since 1830, the sum of $123,319 18. She has instituted scientific surveys—astronomical, trigonometrical, geological, botanical, and zoological—has ascertained the ornithology, the ichthyology, and the entomology of the State; and has expended, for these surveys, since 1830, the sum of $103,414 84. She contributes, annually, to common

schools, over $750,000. In all these, and in many other acts, she has done well. We would not oppose these objects of State inquiry and State expenditure; nor decry the value of facts thus obtained. All useful information should be spread before the people. But while we approve of these matters, we are also of the opinion that there are other objects of equal and even of greater importance for investigation.

"It may be useful to know the extent, the expense, and the circumstances of poverty and crime, in the State; but is it not more useful to know the causes of this poverty and crime, and how much of it arises from diseases and deaths, which might be prevented? Facts and figures may be useful to show us the sanitary condition of banks and insurance companies; but are not facts and figures more useful which show us the sanitary condition of man, who directs and controls them all, who participates in all their benefits, and whose agency ceases on the invasion of disease and death? The money of the State may be usefully expended in premiums for the best farms, the best crops, the best horses, cattle, sheep, swine, the best application of labor, and the best productions of mechanical skill; but might not something as properly be expended in teaching us how and where the best specimens of human life may be produced? what are the causes which most favorably affect its commencement, its childhood, its maturity, its decrepitude, and its extinction? in teaching the people in what places, at what seasons, and under what circumstances it is most invigorated and longest preserved? and how we can best avoid those causes and diseases, which are most likely to occur to debilitate and destroy it? It may be useful to lay out large sums of money to obtain a knowledge of the topography, the mineralogy, the botany, and the zoology,—to have described to us the character and habits of all the wild animals existing in the State; but is it not more important to have described to us the different specimens of human life, as they are modified, formed, and exist, under the various circumstances which surround them in different localities, and how those circumstances affect them for good or evil? Are beasts, birds, fish, insects, of more importance than man, who was ordained 'to have dominion over

all these creatures?' The contributions of the State for public schools may properly be swelled to a sum exceeding $750,000 per annum, and thus secure the general education of mind; but is it not more important to expend a tithe of this sum in educating the body, and in preparing healthy and vigorous abodes for the mind, that we may, as a people, become physically, as well as intellectually great? Compare it with any measure that has engaged the attention of the people of this Commonwealth, or the Legislature, and few if any can be found, which have risen so high, or have equalled it in utility and importance."

All necessary expenses for this object may be easily provided for. If the different items of State expenditure, as given by the State Auditor, were examined, several may be found that seem to us unnecessary, or that might be reduced so as to meet all the cost of this most important measure. It would be easy to specify such items. The Legislature costs about $1,000 per day while in session. By shortening the session three days only, enough might be saved to pay the annual expenses. As much is paid to the Bank Commissioners as would be required for the Board of Health; and it is supposed that all the advantages which result from that commission might be obtained in some other way without any expense. Other items might be specified with equal propriety, and many may be found of doubtful expediency as compared with this. Any candid mind can make his own selection. But suppose we let them all stand as they now do, the adoption of our measure would reduce the cost of supporting state paupers, now incurred on account of unnecessary sickness and deaths, more than sufficient to pay all expenses several times over. And if a direct tax were laid upon the people for its support, though unnecessary, it would be, on the average, less than *three mills* to each person! Who would not consider this a very insignificant expenditure for so noble a purpose?

IV. *It should be approved because it is* EMINENTLY A PHILANTHROPIC AND CHARITABLE MEASURE.

We have recently witnessed three of the greatest nations of the earth lending their aid to discover and save a single adven-

turous navigator, who sailed for the northern regions of this continent to make discoveries, which, if made, would probably have conferred no substantial benefit on mankind. And one of the sons of Massachusetts, with characteristic liberality, has offered, at his own expense, to equip a fleet to continue the search, if the government will provide officers and men. In a beautiful allusion to this matter, Hon. Horace Mann said: "Thus the three most powerful governments in Christendom express their regret and proffer their assistance for the recovery of a single man,—Sir John Franklin. And yet you cannot pass through one of the great streets of this or any other of the cities of this country, you cannot go through the most secluded town or village in all this broad land, without meeting some juvenile Sir John Franklin, some great man in embryo, more valuable, and of more consequence to futurity, than the one who, we fear, now lies buried beneath the icebergs of the Arctic Ocean. All these Sir John Franklins, aye, and Dr. Franklins too, and other names of potential and prospective greatness, who have within them the latent powers which, in their full development, might bless and regenerate the world, are scattered all over this country; but none of the three great nations of Christendom offers its sympathy or succor, or extends an arm for their deliverance from a fate which is as much worse than to be buried beneath the snows of the Arctic, as moral perdition is more terrible than physical."

Yes; and we say if the money that has been thus expended,—if the lives that have been lost in trying to save one life,—had been applied to the discovery of the physical circumstances of the great mass of the people, in the application of useful remedies for their improvement, in saving their lives and in elevating their social and sanitary condition, then, instead of one life saved, the number would have been thousands.

There is another class of philanthropists who are opposed to capital punishment under any circumstances. They look with horror upon the taking of the life of a human being, which has been forfeited to law and justice, even for the crime of wilful murder, though it seems necessary for the safety and protection of other lives. A great amount of labor and money

is spent in the propagation of these sentiments. But how few of such persons apparently turn aside to notice the thousands of lives that are unnecessarily sacrificed,—the social murders and suicides that are daily occurring around us, on account of existing evils which might be removed! If the same zeal, labor and money were expended in diffusing correct sanitary information among the people, in removing the causes of disease which prey upon them, in propagating sound sentiments relating to life and health, and in elevating the physical, social and moral condition of man, how many more lives might be saved! In the one case, if capital punishment should be abolished, an occasional wicked life might be saved from the gallows, though the removal of the terror of that instrument might lead to the loss of many more good lives by the hand of the murderer. In the other case, the philanthropist might count up the lives of thousands saved, and witness social elevation, an increase of sound morals among all classes, and a diminution of the number of murderers and other criminal offenders.

Several noble public institutions, for the removal, cure or relief of the imperfections of human organization, natural or acquired, have been established and patronized by this State. The State Lunatic Hospital has received from the State, during the nineteen years of its existence, $217,140 91, and in 1849 alone, $11,606 34. The Asylum for the Deaf and Dumb at Hartford, since 1830, has received $87,847 25, and in 1849 alone, $8,155 08. The Asylum for the Blind has received $150,773 91, and during last year, $11,500, including $2,500 for the School for Idiots. The Eye and Ear Infirmary, during the thirteen years of its existence, has received $44,000; and, for the last three years, $7,000 per annum. The State Reform School, during the three years of its existence, has received $115,648 94. And the private contributions and annual payments to these institutions have probably been as great or greater than those derived from the public treasury. We would not lisp a word against these great charities, nor wish they had been smaller. They are honorable to the State, and useful to their beneficiaries. It may, however, be stated that the number of recipients of these charities is comparatively

few and limited. They comprehend a very small part only of the great masses of the people. And there is no doubt that the same amount of money, and even the per centage of it, which our measure might require, if applied to the careful ascertainment of the causes of insanity,—the causes of deafness and dumbness,—the causes of blindness,—the causes of juvenile depravity, and to a vigorous prosecution of the means for the mitigation and removal of these causes, as great and even greater good might be effected,—a much greater number of beneficiaries might be assisted. The diseases which these institutions are established to relieve, would be diminished, and humanity would be more largely blessed.

A Humane Society has existed in Massachusetts since 1786, "for the purpose," says an early historian, "of restoring suspended animation, preserving human life, and alleviating its miseries." "Discreet and concise directions for the recovery of persons apparently dead, from drowning, strangling, suffocacation, electricity, or the use of poisons; judicious rewards to such as have jeoparded their lives for the preservation of others, and furnishing convenient shelters, on our sea coast, for shipwrecked mariners, have extensively diffused the benefits of this benevolent institution." Up to 1830, over $20,000 had been expended in promoting its objects. Medals and gratuities have been awarded to meritorious services in saving life. Similar rewards have been generously granted by the government of Great Britain for the aid afforded by American seamen to foreign seamen in distress. A very large number of other voluntary associations exist in this State; and the hand of private charity is widely opened for the cure of diseases, for relief in sickness, for the support of widows and orphans, and for various other similar objects of benevolence and charity. Too much cannot be said in praise of these noble institutions, from which flow so many streams of "oil and wine," to comfort and bless humanity; but it may be well to inquire whether there is not another and still more noble object of philanthropy.

The evils which it is the object of these institutions to relieve may be called the *diseases* of society. By them all our cities and towns suffer. The remedies lie deeper and farther

back. All along we have endeavored to prove that "prevention is better than cure;" and the distinction we have made between the curative and the preventive physician, might with great propriety be applied to these institutions as the curative measures, and to others which might be adopted as the preventive measures. *These are the removal of the causes which produce the misery which these streams of benevolence are applied to alleviate.* On this deep and broad foundation lie the measures we recommend; and they should be approved as the first, the greatest, and most important objects of philanthropy and charity. If we would relieve sickness we must remove the causes of sickness, and prevent it; if we would relieve insanity, and deafness, and blindness, we must remove the causes of insanity, and deafness and blindness; if we would prevent premature deaths, and premature old age, we must remove their causes; if we would provide against widowhood and orphanage, we must remove the causes of widowhood and orphanage; and so of every other evil which it is the object of these charities to alleviate.[1]

V. *It should be approved because it is* A MORAL MEASURE. "There is a most fatal and certain connection," says the Edinburgh Review, (Vol. XCI, for April, 1850, pp. 384, 386,) "between physical uncleanliness and moral pollution. The condition of a population becomes invariably assimilated to that of their habitations. There can be no sight more painful

[1] After the above was written, and while this sheet was passing through the press, the able notice of Edwin Chadwick, Esq., the distinguished sanitary reformer, in the North British Review, for May, 1850, arrested our attention. We extract from page 26, (Am. Ed.) the following passage, coinciding with the views we have expressed:—"The principle, though apparently so simple that no one could miss it, is in reality a discovery. It may be stated thus:—In every case of a social wrong that it is desired to remedy, get at the antecedents, and apply the legislative or administrative interference at that point or at those points, in the chain of antecedents, where such interference may be either most easy or most radical and effective. These phrases, *Get at the antecedents, Mount to the sources*, appear to be stereotyped maxims in the mind of Mr. Chadwick—secrets in his mode of dealing with all questions of social disease whatever. Whether it is into the means of preventing crime that he inquires, or into the means of preventing pauperism, or lastly, as he has more than once proposed, into the means of preventing insanity, his method is still the same; namely, by a rigorous examination of numerous individual cases, to ascertain the most common antecedents of the evil under notice, and out of these antecedents to select that one or those few, on which the rap of a legislative enactment or an administrative precaution may most easily and surely come down. Even in cases of what seems inevitable and hopeless evil, at which society must just gaze with pity and shake its head, he has commonly found that a little inquiry will reveal at least one antecedent that may be destroyed, one source that may be dried up. Thus as regards lunacy, it is his firm belief, announced more than once in his more recent communications with the public, that were all the cases of lunacy in the country to be undertaken by the state in such a manner that the antecedents in each case should be rigorously traced out, causes of that fearful malady would be expiscated perfectly within the range of general regulation and statute."

than that of a healthy, rosy, active countrywoman brought to one of these dwellings. For a time there is a desperate exertion to keep the place clean; several times in the forenoon is the pavement in the front of the house washed, but as often does the oozing filth creep along the stones, and she feels, at length, that her labor is in vain. The noxious exhalations infuse their poison into her system, and her energies droop. Then she becomes sick. Cleanliness becoming impossible, she gets accustomed to its absence, and gradually sinks into the ways of her neighbors. The art of concealing dirt is substituted for the habit of cleanliness; she becomes a dirty, debilitated slattern, followed by sickly, scrofulous, feverish children; and she falls through successive stages of degradation, till, physical wretchedness having done its worst, she reaches the lowest of all, that in which she has ceased to complain. The fate of the children is, if possible, more heart-breaking. All idea of sobriety, all notion of self-respect, all sense of modesty, all instinct of decency, is nipped in the bud; they congregate in masses, and mix with the worst vagrants. At last some dreadful fever forces on the notice of the public the existence of their squalid dens of misery; such as those in the Saffron Hill district,—where twenty-five people were found living in a room sixteen feet square,—where a man and his wife and four children, occupying one room, took in seven lodgers,—and where one house contained a hundred and twenty-six people, and only six or seven beds. These people save nothing, but invariably spend all they earn in drink; and with that precocious depravity too surely evinced by human beings when herded together like beasts, the young of both sexes live together from the ages of twelve and thirteen years."

"The indirect effects of sickness are far more hurtful, though less observable, than the direct effects of mortal disease. Those who merely suffer from fever are about twelve times as many as those who perish. The poison arising from animal or vegetable decomposition acts as a sedative; it lowers the tone, unstrings the nerves, and brings on physical languor and mental apathy. Persons affected by it become unfit for, and have a hatred of, labor. There is no expedient they will not seek

in order to escape from toil. Under this depression, and as a relief from a peculiar inward *sinking* feeling, they have a craving for the stimulus of ardent spirits to an extent inconceivable by persons in happier circumstances; it amounts to a passion, and these debilitated beings are sometimes almost unable to control it. The same poison, by deranging and weakening the digestive organs, produces complaints of a scrofulous and consumptive character, generally accompanied by a feverish and nervous irritability, constantly urging them to the unrestrained gratification of their appetites; and so the process of degradation goes forward. The effort to struggle against the surrounding mass of filth and wretchedness, is given up in sheer hopelessness, and the man's best energies are sapped by the irresistible poison, even while he is endeavoring to resist its influence. The laborer comes home tired, and is glad to escape from the dirt and discomfort,—the poisonous atmosphere of his home,—to a pothouse. In the morning there is no refreshing meal for his support,—again he is driven to the beer-shop; overpowered by the internal craving and external temptations, he becomes a drunkard, and, in time, unequal to hard work. Soon the comforts of life are gone; then its decencies are neglected; the moral feelings, one after the other, are broken down before the most sordid appetites, alike ungovernable and insatiable: he is crushed by drunkenness, profligacy, and poverty, and sinks from one stage of vice and misery to another, till the intellectual faculties become dimmed, all moral and religious feeling expires, the domestic affections are destroyed, all regard for law or property is lost, and hope is quenched in desperate wretchedness: so that at last, owing to these withering causes, families have been found, even in London, huddling together like animals, the very instincts of humanity obliterated, and, like the brutes, relieving every want, and gratifying every passion in the full view of the community. These are the reasons why the districts of filth are not only the districts of fever, scrofula, consumption, and cholera, but also of crime. Habits are early formed of idleness and dishonesty,—of brutality, inexpressible profligacy, and sensual indulgence; and here are educated the irreclaimable malefactors."

These are no fancied sketches, but awful realities. Such pictures of the sad moral effects of living in badly located, over-crowded, and filthy habitations, are to be seen in most of the populous cities, and, to some extent, in the country. We have had frequent occasion to enter these abodes of wretchedness. "The offensive refuse which even animals will bury out of sight, is brought into perpetual contact with human beings. It stagnates in the courts and alleys, flows into the cellars, and is sucked up into the walls. Men, women and children eat, drink and sleep, surrounded by its disgusting effluvia. The pig in its sty is not more familiar with its own odor, than is the wretched immortal in the dwelling which ignorant carelessness has built for him, and municipal and legislative indifference has suffered him to inhabit."

In some of these houses, one, two, or more families are found in one and the same room,—cooking, eating, drinking, washing, dressing, undressing, sleeping, and doing many other acts namable and nameless. Fathers and mothers, men and women, boys and girls, may be seen living and sleeping in promiscuous confusion. In some instances, too, persons may be found in the immediate presence, or in the same bed, with a dead body, struck down with typhus, cholera, or some other zymotic disease, or by the slow wasting of consumption; and in others, a child is born, or an adult dies,—one immortal spirit makes its entrance into, and another makes its exit from, this world, at nearly the same time, in the same wretched abode, and surrounded by similar appalling circumstances. Can moral principle be inculcated in such an atmosphere, and surrounded by such influences? Must not degradation, vice, crime, be their natural, inevitable tendency? If they are not, in individual instances, they must be taken as rare exceptions. "You cannot degrade the physical man by a life-long familiarity with scenes of filth and indecency, without debasing his whole moral nature."[1]

The object of the measures we recommend is to remove filth and prevent disease, to introduce those accommodations which

[1] Mr. Chadwick, in his report, says of such scenes in England, "the corpse is never absent from the sight of the survivors; eating, drinking or sleeping, it is there." (See Sanitary Movement, p. 13.)

allow, and reform those habits which prevent, the elevation of the physical man, the social nature and moral condition of our fellow-beings. They are the best handmaids we can give to prosperity, to morality, and to religion.

Dr. Simon, whom we have often quoted, gives us a similar picture. "Among the influences prejudicial to health, must be reckoned the social condition of the lower classes; and I refer to this the more especially, because, often in discussion of sanitary subjects, the filthy, or slovenly, or improvident, or destructive, or intemperate, or dishonest habits of these classes, are cited as an explanation of the inefficiency of measures designed for their advantage. It has been urged that to bring improved domestic arrangements within the reach of such persons is a waste and a folly; that if you give them a coal-scuttle, a washing-basin, and a water-closet, each of these several utensils will be applied to the purpose of another, or one to the purposes of all; and that meanwhile the object of charitable solicitude will remain in the same unredeemed lowness and misery as before. Now it is unquestionable, and I admit it, that in houses combining all the sanitary evils which I have enumerated, there do dwell whole hordes of persons who struggle so little in self-defence against that which surrounds them, that they may be considered almost indifferent to its existence, or almost acclimated to endure its continuance. It is too true that among these classes there are swarms of men and women who have yet to learn that human beings should dwell differently from cattle; swarms to whom personal cleanliness is utterly unknown; swarms by whom delicacy and decency, in their social relations, are quite unconceived. Men and women, boys and girls, in scores of each, using jointly one single, common privy; grown persons of both sexes sleeping in common with their married parents; a woman suffering travail in the midst of the males and females of three several families of fellow-lodgers in a single room; an adult son sharing his mother's bed during her confinement; such are instances recently within my knowledge of the degree and of the manner in which a people may relapse into the habits of savage life, when their domestic condition is neglected, and when they are suf-

fered to habituate themselves to the uttermost depths of physical obscenity and degradation. Contemplating such cases, I feel the deepest conviction that no sanitary system can be adequate to the requirements of the time, or can cure those radical evils which infect the under-framework of society, unless the importance be distinctly recognized, and the duty manfully undertaken, of improving the social condition of the poor. Those who suffer under the calamitous sanitary conditions which I have disclosed, have been led, perhaps, to consider them as inseparable from poverty, and after their long habituation to such influences, who can wonder if personal and moral degradation confirm them more and more to the physical debasement of their abode? In the midst of inevitable domestic filth, who can wonder that personal cleanliness should be neglected? In an atmosphere which forbids the breath to be drawn freely, which maintains habitual ill health, which depresses all the natural spring and buoyancy of life, who can wonder that frequent recourse should be had to stimulants, which, however pernicious in themselves, still for a moment dispel the incessant languor of the place, give temporary vigor to the brain, and cheer the flagging pulses of a poisoned circulation? Who can wonder that habits of improvidence and recklessness should arise in a population, who not only has much ignorance and prejudice amongst it, but which likewise is unaccustomed to consideration and kindness? Who can wonder that the laws of society should at times be forgotten by those whom the eye of society habitually overlooks, and whom the heart of society often appears to discard? I believe that now there is a very growing feeling abroad that the poor and degraded of a Christian country can no longer, in their own ignorance and helplessness, be suffered to encounter all the chances which accompany destitution, and which is allied, often indissolubly, to recklessness, profligacy, and perdition. The task of interfering in behalf of these classes, however insensible they may be of their own danger and frequent degradation, begins at length to be recognized as an obligation of society."

It is right that these things should be known,—it is well that

they should be considered. We have one pestilence after another to warn us that the destroying angel is at hand. In the mean time, thousands of citizens are hurried through a miserable existence to an untimely end. While we write, they are dropping into their graves. We fill our jails with felons, and we have city missions, and put our trust in education; but the influences of filth and disease are stronger than the police-man, the missionary, and the schoolmaster. To the abodes which we have described, "the Sabbath never comes. In vain its morning eye peeps kindly in at the gloomy windows, for it meeteth no recognition there! In vain its meridian beams, struggling through the murkiness and filth, above, around, and beneath, seek to shine into the doorways of those den-like homes,—for they are quickly quenched by the deep darkness that abideth there! There the Sabbath's decencies are never cultivated,—the Sabbath's peace never enjoyed,—the Sabbath's festival is never kept,—the Sabbath's blessing is never known!"

VI. *It should be approved because the* PROGRESS OF THE AGE DEMANDS IT.

The half century just now drawing to a close, is a wonderful period in the world's history. Inquiry and discovery have been abroad in the earth. New facts and new truths have been ascertained—new sciences have been developed, and the boundaries of old ones have been greatly enlarged. These discoveries have produced revolution after revolution,—have multiplied the means of convenience, comfort, pleasure, and luxury,—until our social and practical life is a very different thing from the social and practical life that existed fifty years ago. And were it not that we have grown up with the results, they would appear almost beyond the limits of reality or possibility.

How are these wonders produced? Mainly by giving to the human mind a knowledge of new facts, and by directing this knowledge to the discovery of the laws of nature, and to their combination and practical application. The wonders of the steam engine, besides giving us a new and most important stationary mechanical power, has revolutionized our systems and habits of locomotion, by sea and by land. A journey from Bos-

ton to New York, which formerly required days for its performance, is now accomplished within a few hours. A voyage to England, once always of uncertain duration, and frequently requiring months for its performance, is now made in ten days. One month only, instead of six, is consumed in a voyage to the Pacific coast. Events which have taken place in the East Indies have been known here within a month afterwards! These great facilities of intercourse increase, immensely, the number of travellers, and bring the inhabitants of the whole civilized world in contact, and make them acquainted with each other. What is known by one person in one place may be known by all in every place. "Many run to and fro, and knowledge *is increased.*" These are the discoveries,—the characteristics of the age,—and they have an incalculable influence on human development and progress.

A process by which the laws of electricity and magnetism may be applied to the purposes of intercommunication between different minds in different places, is a recent discovery, also exciting the admiration and astonishment of mankind. Who would have imagined, a few years since, that a commercial order could be sent from Boston to New York, that order executed, and the answer received in Boston, and the whole occupying but *ten minutes!* And yet this wonder has been accomplished. Thought, the moment it is uttered, may be transmitted with the speed of lightning to distant regions, and leave its foot-prints, at pleasure, at any place along its course. And copies of these foot-prints can be multiplied by the power of steam at the rate of ten or more thousands per hour, and by the same power scattered in all directions. It is thus that nearly every important event is now known throughout this vast country almost as soon as it occurs.

The discoveries, too, in geology, in chemistry, and in other natural and physical sciences, are no less wonderful. In almost every department of knowledge, and in almost all the features of practical and mechanical life, there prevails an astonishing activity. New discoveries are constantly made, and each gives new impetus to further developments. Man accomplishes more in a few months now than formerly in many years. He seems

to live faster and longer in the same time. All is energy and progress. If these distinguishing characteristics of the age are wisely directed, by wise men,—if the progress shall be towards good and not towards evil,—it is impossible to tell what future glories are yet reserved for the triumph of the human mind. We are among those who believe that the age of discovery is yet in its infancy; and that, great as are the achievements of the human intellect, others still more wonderful are yet in store for us.

Do not these characteristics of the age demand that something should be done for Sanitary Reform? Shall the art of preserving our lives, and of invigorating our health, be the only art that shall remain in the same stationary position in which it has long existed; or that shall be permitted sometimes to make a retrograde movement? Shall ignorance, presumption and apathy brood over this most vitally important matter, while intelligence, attentive application, and vigorous activity press forward other objects in their rapid career of advancement towards perfection? We have described the field of inquiry,—we have shown that there is encouragement to labor; and we believe that in no science or art,—in no department of knowledge or discovery, can more important or more useful achievements be made. Vaccination, etherization, and other preventive agencies, are great discoveries, but not greater than other and similar ones which are destined hereafter to be known.

Observation and discovery in the cure and expulsion of disease after its invasion we would not exclude, but would advocate and elicit in every available and useful form; and we believe there is much in this department of knowledge yet to learn, notwithstanding the great progress which medical science has made within the past few years. One of our most intelligent and eminent physicians was lately asked—"Do you suppose that the medical profession has arrived at that degree of knowledge which shall admit the belief that further useful discoveries cannot be made in the modes of treating disease?" "Certainly not," said he; "*we are as yet only on the borders of ignorance!*" This may be true in many respects. Notwith-

standing the brilliant discoveries that have been made in physiology and in the various departments of medical science and medical practice,—notwithstanding the more thorough education and the more eminent medical skill that characterizes many physicians of the present day,—there are few of them who have not sometimes discovered the imperfection of human attainments, and the uncertainty that may yet attend a practice guided by the highest medical skill. The measure we recommend is designed to pile up fact upon fact, in relation to life, disease, and mortality, until their nature and laws are ascertained and demonstrated; and thus aid, in various ways, in increasing knowledge, in leading to important discoveries, and in removing those uncertainties which attend the practice and success of the profession. And in this way we shall attempt to meet the demands of the age.

But the Sanitary Reform we advocate lies chiefly in another field of observation and discovery, which has as yet been very imperfectly explored. This may be called the *Province of Prevention*—prevention of disease—prevention of suffering—prevention of sanitary evils of every kind; and the efforts of those who enter this hopeful province should be directed to the discovery and the means of removal of the *causes of these evils*. Every effect must have a cause—every disease has its cause. And the effort should be to ascertain the exact relation which one bears to the other—what known, exact and positive causes, will produce a known, exact and positive disease, or a sanitary evil of any specific kind, and none other. And is not this as far within the limits of possibility and certainty as is the treatment and eradication of disease? Cannot the exact nature of an atmospheric, local or personal cause of disease, and the exact personal condition with which it most easily assimilates, and which it most easily affects, be definitely and accurately ascertained? If such a desirable discovery could be made, what manifold blessings on humanity would it confer! We know that a human body, unaltered from its original organization or functions, coming in contact with the virus of small-pox, either inhaled while floating in the atmosphere, or imbibed by outward contact or inoculation, will produce a

specific effect,—a specific disease. Here is cause and effect of a known and exact relation to each other. We know, too, that vaccination, properly performed, will alter the original organization or functions, so that the same virus will not in either way take effect. Here is another exact cause and effect whose relations are equally known. This is a discovery which has, within the last fifty years, saved thousands and thousands of lives, and might have saved thousands more, had it been universally applied. Now it is but fulfilling the demands of the age to press inquiries vigorously, and to endeavor to discover the causes of every disease which may attack the human body. If the same exact and definite information could be obtained, as to the causes of cholera, dysentery, scarlatina, typhus, consumption, and the other grave diseases, to which we are subject, and as to the particular condition of the individual which they most easily affect, how much might be done for the avoidance of those diseases by the removal of their causes! How many lives might be saved, how much suffering might be prevented! Does not the spirit of the age then demand the approval of a measure which promises to do this great,—most important work?[1]

VII. *It should be approved because* IT INVOLVES AN IMPORTANT DUTY.

If a measure is practical, useful, economical, philanthropic, moral, and demanded by the spirit of the age, it needs no argument to show that it is our duty to approve it. And if such is our obligation, nothing further need be said. For, in our judgment, whoever violates a *known duty* is guilty of crime, and justly makes himself liable to its penalties. If an individual swallows poison, and death immediately follows; or if, by improper eating, drinking, or course of life, he gradually debilitates his constitution, and death is the ultimate consequence, he violates a known law, neglects his duty, and justly suffers

[1] "Of all the great undertakings by which the era is signalized, there is perhaps none which so clearly stamps a character of real and essential progress as the Sanitary Movement; for the result of this, mediate and immediate, is a positive, a cumulative good; a social, moral, and intellectual amelioration of a most beneficial nature,—one which we believe is destined to effect great results in the material advancement of a people. Its ultimate effect whether so intended or not, lies beyond the pecuniary advantage—the dollars and cents; it recognizes the existence of claims and sympathies—intimate relations between all phases and grades of society."—*Chambers' Papers for the People, No. 9, p. 1.*

the physical penalties of his guilt. If we, as social beings, make no effort to elevate the sanitary condition of those around us by removing the causes of disease, we violate a known duty, and make ourselves justly guilty and liable to punishment; and we shall inevitably be punished, either by suffering sickness, or by death, or in some other way. If a municipal or state authority neglects to make and execute those sanitary laws and regulations on which the health and life of the people depend, they violate a known duty, and are justly chargeable with guilt and its consequences; and they will certainly be punished, either by means of less capacity for labor, of increased expenditures, of diminished wealth, of more abject poverty and atrocious crime, or of more extended sickness and a greater number of deaths; or in some other form. These are the physical and social consequences of a neglect of sanitary duty. But there are others; and we would mention them with all that regard which is their due.

It has already been said that the first sanitary laws were the direct revelation of the Divine Lawgiver; and that they have been further developed in the successive ages of the world. These laws are now, to some extent, well understood. And may we not conclude that we shall be brought to an account for the manner in which we have observed and obeyed them? May we not reasonably believe that we shall hereafter see the wisdom of that providence which produces the earlier and later deaths, the physical sufferings, and the innumerable sanitary evils which surround and afflict us in this world,—that they were the just and inevitable result of violations of those sanitary laws which were given us for our guidance and happiness,—and that these evils might have been avoided if these laws had been understood and obeyed? May it not then appear that many a law-maker, many a public administrator, and many a private individual, has been guilty of robbing others, and of robbing himself, of health and of life,—all that is dear on earth;—guilty of murders and of suicides;—and none the less fearfully real and punishable because they were unintended? The possibility of such a result may well arrest universal attention. "In regard to the whole range of the laws of health

and life, Providence seems to treat mere ignorance as an offence, and to punish it accordingly." There is a great social and personal responsibility resting upon every one in this matter; and it is well that it should be felt in all its force and importance, and that all the duties which it requires should at all times, and in all places, be wisely discharged.

VIII. *It should not be* DISAPPROVED *because* OBJECTIONS MAY BE BROUGHT AGAINST IT.

In the previous pages we have anticipated answers to some of the objections that may be brought against this measure. There are some others, however, which require to be noticed.

1. *It may be said*,—"Your plan is too complicated; you require too much; it will not and cannot be carried into operation."

Before characterizing any measure, a candid mind will at least examine, and endeavor to understand it. There are some persons, however, who, even without previous study or knowledge, and by a mere casual glance, deem themselves qualified to give an intelligent opinion whether a measure has merit or demerit. Sometimes a plan may appear complicated before examination, but simple afterwards. It has been the fate of new measures, generally, to be thus hastily judged. It was so in the first stages of the sanitary movement in England; and it is not supposed that our recommendations will be exceptions to the general rule. Various reasons and motives operate upon the minds of men to lead them to different conclusions. Ignorance, prejudice, interest, or some other cause, may do it. We well recollect the remark of an intelligent and distinguished member of the Legislature, now deceased, when the application for an act of incorporation for building a railroad between Boston and Worcester was under consideration, and his influence was solicited in its favor:—"I have no objection," said he, "to the passage of the act, for the road will never be built,—it is impracticable. And if it could be built, it would be perfect folly to do it,—it could not be supported." He did not live twenty years afterwards to see $5,000,000 expended on the road, and 57 trains pass over it daily; a single passenger train sometimes carrying 2,700 persons, and a freight train carrying

400 tons of merchandise! The plan for taking the census of Boston, in 1845, was opposed by some, at its first introduction, because it was alleged to be impracticable and useless. The result, however, proved it otherwise in both respects; and the same plan, substantially, has since been approved and followed in other cities, and has this year been adopted for taking the seventh census of the United States. It was said that the laws for the registration of births, marriages and deaths could not be carried into operation; and no special attempt was made to do it in Boston until 1849, when, by a simple ordinance, it was successfully done. Similar illustrations might be furnished in the history of the incipient stages of nearly all new measures and enterprises; but after they have been put into operation, they have been found so practical and so useful that it has been thought strange that they were opposed, and that the same thing had not been thought of before! And in this light, we have no doubt, this measure will soon be viewed.

2. *It may be said,*—"The measure is not applicable to this State; it may be well enough in some other places and countries, but we do not suffer evils which require such remedies for their removal; no people are more healthy than we; we are well enough as we are."

We most cheerfully and most gratefully admit that in some of our towns, and among some classes of our people, sanitary evils do not exist to so great an extent as in some other places. But while we admit this, we affirm, from the most authentic evidence, that in many places and among many classes of our population,—in many families and among many persons,—there is scarcely to be found, anywhere, more ignorance of the laws of health, more disregard to proper sanitary regulations, and more suffering for their neglect. Our towns, our cities, and our dwelling-houses, it is true, are not so old, nor do many of them have so forbidding an exterior, as many in Europe; but it does not take ages to convert a new house,—a palace,—into a den of filth and disease. Conditions may exist, and do actually exist, on open fields, on hill sides, in the interior of the country, as well as in cities, favorable to the production of disease. A whited sepulchre may be full of dead men's bones (or causes

that will produce them) and all uncleanness. Those who say that, in this State, the measure is inapplicable, have yet to learn the condition of the people and furnish themselves an argument for its necessity.

How stand the facts? The average number of persons to a dwelling-house in London, in 1841, was 7.5; in Liverpool, 6.9; in Manchester, 5.7; in Edinburgh, 6; and in the whole of England, 5.4. And it has been considered a monstrous evil that, in some of the districts in the city of London, sixty persons are to be found in one house. The number of persons to a dwelling-house in Boston, in 1845, was 10.75; and, in a section of the city containing 3,131 inhabitants, the number to each house was 37; and the space for each inhabitant, in the whole district, including streets, was equal only to *seven* square yards! This is equal to some of the worst districts in Liverpool. One of this commission predicted, years ago, that if the cholera or any other epidemic should appear in Boston, it would first take up its abode in such places. We refer to extracts from the valuable report of the City Physician, in the appendix, for evidence of the fulfilment of this prediction. And it must be recollected that, in these places, typhus, scarlatina, dysentery, and other epidemic diseases, and scrofula and consumption, are doing daily what cholera does only occasionally. In these abodes "infancy is made stinted, ugly, and full of pains,—maturity made old,—and old age imbecile; and pauperism made hopeless every day."

Much has been said of the sanitary evils of London,[1] where 32 per cent. of the deaths are those of persons under 5 years of

[1] The opponents of the sanitary movement in England, in its incipient stages, represented London as the most healthy city in the world; and yet its condition has justified the following statement:—"About two millions of inhabitants are contained in the metropolis, or about one-eighth of the population of England and Wales, and about one-fourteenth of the United Kingdom. Of this number, according to the Registrar-General's statement for 1844, 50,423 die annually, or 1 in 39. But if the rate of mortality were 1 in 50, in place of 1 in 39, as it is in several large towns of England, and in the healthier parts of the metropolis itself, there would be an annual saving of 10,278 lives. In the metropolis, there are about 266 deaths every week, nearly 38 deaths a day, or considerably more than one every hour, *over and above* what ought to happen in the common course of nature. Now, it has been calculated that, for every death which takes place, there are 28 cases of sickness which do not end fatally. We have, therefore, 387,296 cases of sickness occurring in the metropolis every year, which are unnecessary and preventible. 13,832 lives could be saved,—more than a third of a million of cases of sickness could be prevented. *One-fifth* of the total waste of health and life which takes place in the United Kingdom occurs in the metropolis. Of the 49,089 persons who died in London in the year 1846, 22,275 died before they reached the 15th year of their age, and only 2,241 of old age, which the illustrious Boerhaave stated to be the only disease natural to man."—*Journal of Public Health*, vol. ii. p. 225.

age, where the average age of all, at death, is 26½ years, and where the annual rate of mortality for the whole population is 1 in 40. In Boston, from 1840 to 1845, 46.62 per cent. of all the deaths were those of persons under 5 years of age, and in some classes of the population more than 62 per cent. were under that age; the average age of all that died in the same period was 21.43 years, and of the catholic burials, 13.43 years only. And the rate of mortality for the whole population, for the last 9 years, was 1 in 39, and for the last year, 1 in 26. *And yet Boston is a "healthy place!"* London, with its imperfect supply of water,[1]—its narrow, crowded streets,—its foul cesspools,—its hopeless pauperism,—its crowded grave-yards,—and its other monstrous sanitary evils, is as healthy a city as Boston, and in some respects more so. If sanitary reform is needed in one, it is needed in the other also. And many of the country towns suffer a mortality nearly as appalling,—and yet "this measure is not applicable to us!"

There is another consideration shewing the applicability of this measure. Under no government is human life more valuable than with us; and under none is it more important that it should be preserved and invigorated. If it is for the well being of society in Europe that human life should be preserved,—if it is considered a high social and moral duty to elevate it from a low to a high standard of health, where the poor houses are crowded with inmates,—where labor is cheap, and where its products add so little to general or to individual wealth, how much more is it for the well being of society in this country to preserve human life, where labor is in so great demand, and where each laborer, so long as he continues in health, not only contributes to the general wealth, but provides for his own individual independence! If sanitary reform is a duty there, where the life of man is, in a pecuniary view, of so little value,

[1] The following description of the water used by the citizens of London, is from the Edinburgh Review, (April, 1850, p. 331): "The refuse and dirt from two millions of individuals,—the enormous accumulation of waste and dead animal and vegetable matter,—the blood and offal of slaughter-houses,—the outpourings from gas-works, dye-works, breweries, distilleries, glue-works, bone-works, tanneries, chemical and other works,—and a thousand nameless pollutions,—all find their way into the Thames. The mixture is next washed backwards and forwards by the tide, and, having been thoroughly stirred up and finely comminuted by the unceasing splash of 293 steamboats, is then pumped up for the use of the wealthiest city in the world!" And yet a city which depends upon such water for its domestic use is as healthy as Boston!

how much more is it a duty here where it is of so great value ! And in a social and moral view the contrast makes the obligation still more binding.

Another view of the subject may be presented in this connection. Whatever may have been the sanitary condition of the people of Europe, some of the most unfavorable specimens have emigrated to this country, bringing with them the habits and imitating the customs in which they were educated in the land of their nativity. By these means many of the sanitary evils which have there called so loudly for reform have been introduced among us. Such evils cannot be safely endured in this State. It is in vain for us to suppose that they can be confined to the persons alone whom they immediately affect. We cannot wall up the pestilence, or shield ourselves from its influence. It will diffuse itself through the whole community, until all classes, to a greater or less extent, feel its power,—until all persons and all interests, in all parts of the State, are affected. We have shown that the public health is deteriorating,—that human life, on the average, has been gradually growing shorter; and it may perhaps be partly owing to this cause. And if we would arrest the downward tendency, we must adopt and carry forward an efficient plan of sanitary reform. All the arguments in its favor apply with tenfold more force here than in foreign countries. Can any one say with truth, in this view of the subject, that the measure is not applicable to us? We need such a measure to elevate the sanitary and social condition of every part of the population.

We have said that great ignorance of the laws of health, and a reckless disregard for their requirements, prevail among a large portion of our native population. And this is emphatically true; although as a people we may be generally educated,—possess great application and industry,—great energy and perseverance, yet at the same time we are sometimes led recklessly on by desires for wealth, or for self-gratification, in total ignorance of correct sanitary laws, or in total disregard of the duties of preserving our own lives and the lives of others. These dangerous sanitary habits should be discarded, and more safe and correct ones substituted in their places. And in no class

of our people, among few or no individuals, does there exist a state of health so high that no higher can be attained. By a clearer knowledge of the physical laws, and a closer application of those laws to habits, regimen and training, to local and atmospheric influences, a much higher vigor, a greater power of endurance, and a more full enjoyment of life may be attained by every class of the people. And will not this measure greatly aid in the accomplishment of this most desirable reform? Is it not applicable to us,—*to any people?*

3. *It may be said,*—"I don't think much of your statistics; you can prove anything by figures."

This is an oft-repeated remark, but in our judgment may be easily answered. *Statistics* may be defined *the science or art of applying facts to the elucidation and demonstration of truth.* It is the basis of social and political economy, and the only sure ground on which the truth or falsehood of theories can be brought to the test. Mere columns of figures may or may not be statistics. They form, in any case, a small part only of the illustration. Combination and deduction are required to give them full effect. We belong to that class of statists who have no particular fondness for *figures,* though we have a great fondness for *facts.* We use figures as the representatives of facts, not fiction,—of truth, not falsehood,—and find them very convenient for that purpose. We find it very difficult to prove or disprove many propositions without them. We are aware that some persons have a great antipathy to facts and statistics; but in this "matter-of-fact-age," they are required; and they are far more useful and important than the fiction and theory, the assumption and assertion, that have occupied so much of public attention. We would follow, in estimating human life and human health, in all their various departments, bearings and relations, the same course that judicious men pursue in other matters.

The state and condition, the *statistics* of a country, can be known only by gathering together the facts as to its movements and progress; and the statesman looks at the figures which represent these facts, and combines and deduces the truths they contain, for his guidance.

It is a fact that at an election Mr. A. received a certain number of votes, and Mr. B. a certain other number, in each of several towns. These facts, or statistics, being gathered together and represented by columns of figures, prove that Mr. A. received more votes than Mr. B., and is therefore elected. Suppose you attempt to prove by these figures that Mr. B. was elected, what process would you adopt?

It is not often that the judicious merchant or other business man guesses, estimates, or theorises on this or that kind of business,—on this or that man's account,—on his own profit and loss,—or on his own pecuniary *sanitary* condition; but he goes to the *statistics of his business*,—the records of his progress,—his books; and he values and is guided by the definite facts thus disclosed. So we prefer a definite fact, even if it appear as a statistical truth, and represented by figures, to uncertain theory or vague speculation and assumption.

It would be easy to illustrate, almost indefinitely, these general remarks, and to show the advantage and absolute necessity of this mode of presenting truth, but we deem it unnecessary.

4. *It may be said*—"This measure will interfere with private matters. If a child is born, if a marriage takes place, or if a person dies, in my house, it is my own affair; what business is it to the public? If the person die at one age or at another,—if he die of one disease or of another, contagious or not contagious, it's my business, not another's,—these are private matters."

Men who object and reason in this manner have very inadequate conceptions of the obligations they owe to themselves or to others. No family,—no person liveth to himself alone. Every person has a direct or indirect interest in every other person. We are social beings—bound together by indissoluble ties. Every birth, every marriage, and every death, which takes place, has an influence somewhere; it may not be upon you or me now; but it has upon some others, and may hereafter have upon us. In the revolutions of human life it is impossible to foretell which shall prosper, this or that,—whether I shall be a pauper or have to contribute to support my neighbor, as a pauper,—whether I shall inherit his property or he inherit

mine; and every person should be willing, and even desirous, to place within the reach of every other person, the fact that he has existed, and the means of identification. This is the common right which the public should claim of every one, and the common *privilege* which every one should have in all others.

"A well-organized system of civil registration," says the Edinburgh Review, (Vol. XCII, for July, 1850, p. 43,) "is one of the first wants of an enlightened people. No man in such a people is above or beneath the obligation of authenticating his existence, his claims on the protection of his country, and his fulfilment of the duties of a citizen,—or of contributing his individual quota of information, in what personally concerns himself or his family, in reply to any system of queries which the government in its wisdom may see fit to institute respecting them. Such information may be regarded as a poll-tax, which, in this form, a government is fairly entitled to impose, which is at once the justest and least onerous of taxes; or rather it may be looked on as a mode of self-representation, by which each individual takes a part in directing the views of the legislature in objects of universal concern. Nothing, therefore, can be more unreasonable than to exclaim against it, or to endeavor to thwart the views of government in establishing such a system,—nor anything more just than to guarantee its fidelity by penalties imposed on false returns or wilful omissions."

Erroneous ideas on this subject have, to some extent, existed in the minds of many persons. It has been thought that it was indelicate and impertinent to be thus inquisitive; but happily these views are fast passing away. It is becoming more and more apparent that such information is useful to the public, to protect public rights and public health, and may be very important to the individual, to protect personal rights and personal health. And a little candid thought must convince every unprejudiced mind, that immense benefit would result to the whole community and to each member of it, by the adoption of this measure, and by the information which it would elicit. A knowledge of these matters, alleged to be private, may be an incalculable public benefit. Without it, any attempt to estimate the sanitary condition of a place or a people, and the preva-

lence of different diseases, will be nearly worthless. The results will be uncertain, and not reliable as a correct basis on which to found remedies for improvement and progress.

5. *It may be said,*—"This measure will interfêre with private rights. If I own an estate hav'n't I a right to do with it as I please? to build upon it any kind of house, or to occupy it in any way, without the public interference? Hav'n't I a right to create or continue a nuisance—to allow disease of any kind on my own premises, without accountability to others?"

Different men reason differently, in justification of themselves, on this matter. One man owns real estate in an unhealthy locality; and if its condition were known, it might affect its value. Another has a dwelling house unfit for the residence of human beings; and he will oppose any efforts to improve it because it will cost money, and he can have tenants in its present condition. Another does business in a place where, and at a time when, an epidemic prevails; and his occupation may tend to increase it; and, if these facts were known, it might affect his profits. These and similar reasons may lead different minds to oppose this measure. How extensively such opinions prevail we will not attempt to state. Some twelve years since one of this commission introduced into the city council of Boston, an order of inquiry relating to a certain locality supposed to be unhealthy; but it was strongly opposed, because, as was stated, it would impair the value of the real estate in the neighborhood! There may be individuals who place dollars and cents, even in small amounts, by the side of human health and human life, in their estimate of value, and strike a balance in favor of the former; but it is to be hoped that the number of such persons is not large.

We subjoin extracts from three different authorities, which contain correct views on this subject:—

"Every man who chooses to hold property in a town must learn that there are certain duties connected with that property, by the very nature of it, which must be fulfilled. He cannot use it as he would. He must, on the contrary, submit to those wise legislative measures which in all ages have been found necessary to protect the common weal. The attempt to

obtain exorbitant profit, either from the sale of land or the rent of houses, must be curbed by a proper public spirit, and by the legislature declaring what kind of streets and houses it will allow to be built, and how many upon a given space. We must revert to the ancient laws, and permit nothing to be done, come what may, which shall injure the health or comfort of the inhabitants. But those who possess property must not imagine that in doing this we shall interfere with their real interests; for in the moral arrangements of the universe there are certain checks which infallibly prevent our doing as we would in these matters. We may build double the number of houses, and quadruple the population on any given space, but sickness and death, and moral as well as physical degradation, will step in and prevent our reaping the fruits we anticipate."[1]

"One of the primary prejudices,—one of those least spoken of but most felt,—which sanitary reform has to encounter, is a vague apprehension of undue interference. All regulations for securing cleanliness and removing filth, are apt to be considered as invasions of the privacy of the domestic hearth and the person, and amounting to an impertinent intermeddling, in matters concerning which it is insulting even to be inquisitive. But in reality the object of sanitary reform is to free the citizen from the vile fetters with which the acts of others have actually bound him, and to leave him free to pursue the natural tendency towards civilization and refinement, rather than to assume any arbitrary control over his actions. We believe it to be quite true that it always injures the individual to do for him what he ought, and is able, to do for himself. But the operative workman must live in the city, or starve; and if selfish wealth has made the city such that he cannot find a cell in it which is not a living tomb, saturated with corruption,—then he is not left to the freedom of his own actions, but is subject to an abominable bondage caused by the conduct of others. The strength and skill of Hercules could not enable the city artisan of Glasgow to live in purity; and if legislation cleanses the Augean stable, it is not doing for him what he should have

[1] Liverpool Health of Towns' Advocate, p. 37.

been left to do for himself, but only saving him from suffering by the selfishness of third parties beyond his reach."[1]

"In the restrictions which prevent every man from doing for his own profit or gratification that which inflicts on his neighbor a deadly injury, there is no hardship;—it is simple justice. Our law requires that the railway company, the master of the steamboat, and the manufacturer of gunpowder, should respectively conduct their operations so as not to endanger the safety of the community; and there can be no reason why the same responsibility should not be attached to those whose profitable occupation is building or spinning. Such intervention on behalf of the public is not to be confounded with the old sumptuary laws,—for it interferes with things, not with persons; nor can it be compared to attempts to regulate labor and wages, or to restraints on trade,—for it is not done to procure, by the artificial adjustment of something which men can best settle for themselves, some speculative advantage, but, on the principle of *salus populi suprema lex*, to protect one set of human beings from being the victims of disease and death through the selfish cupidity of others. The owner of the soil is the person who mainly profits by the accumulation of a city population;—his, at all events, are advantages for which he neither toils nor spins; and many of the princely fortunes of our day have been created by the rapid rise,—often causeless and capricious, so far as the owner himself may know,—of city populations. It does not seem then to be a very hard rule either of morality or law, that a proprietor who accumulates wealth by any such means, shall be compelled to submit to regulations which, should they even in some degree reduce the amount of his gains, may be a security, against the lives of those who by the necessities of their position are enriching him, from being sacrificed to his avarice or his recklessness. While he derives a profit by letting out his square yards of the earth's surface, it surely is not unfair that he should become bound not to transfer it to the occupant perforated throughout with pit-falls in which health and life may be lost."[2]

[1] Edinburgh Review, January, 1850, p. 213. [2] Ibid. 214, 215.

"It is the common right of the neighborhood," says Dr. Simon, "to breathe an uncontaminated atmosphere; and with this common right nuisances must be considered to clash. It might be an infraction of personal liberty to interfere with a proprietor's right to make offensive smells within the limits of his own tenement, and for his own separate inhalation; but surely it is a still greater infraction of personal liberty, when the proprietor, entitled as he is to but a joint use of an atmosphere which is the common property of his neighborhood, assumes what is equivalent to a sole possession of it, and claims the right of diffusing through it some evanescent effluvium which others, equally with himself, are thus obliged to inhale."

Such are the opinions of some of the most eminent authorities in England on this matter; and they are sanctioned by the highest judicial tribunal in our own State. There have been few decisions in our courts, in cases for violations of the sanitary laws of the Commonwealth; but such as have been made are in opposition to the principle of this objection, and in accordance with the views here presented.[1]

6. *It may be said,*—"Your measure will create an unnecessary expense; the State already spends too much money; we cannot afford it."

Every one should reflect that this *is not an expense*, but an investment,—a saving,—a "stitch in time," which is designed to add to the wealth and not to the poverty of the Commonwealth; and such we have proved will be the result. Expenditures for celebrations, and for various temporary or other purposes, and of doubtful expediency, more than sufficient for this purpose, are often made within this State, without opposition and without counting the cost; and why should the trifling

[1] See Pickering's Reports, Vol. VII, p. 76; and Vol. XII, p. 184. We extract one of these decisions. "It is not only the right but the duty of the city government of Boston, so far as they may be able, to remove every nuisance which may endanger the health of the citizens. And they have necessarily the power of deciding in what manner this shall be done, and their decision is conclusive, unless they transcend the powers conferred on them by the city charter. Police regulations to direct the use of private property so as to prevent its being pernicious to the citizens at large, are not void, although they may in some measure interfere with private rights without providing for compensation. The property of a private individual may be appropriated to public uses in connection with measures of municipal regulations, and in such case compensation must be provided for, or the appropriation will be unconstitutional and void."

outlay for this most useful measure be urged to defeat it? But we have already demonstrated the economy of the measure (especially in pages 250 to 260,) and we deem it useless to reply further to such as may still persist in making this objection.

7. *It may be said,*—"If you diffuse information on these matters generally among the people, will you not make every person his own physician? will you not increase, and not suppress quackery; and thus magnify and not diminish the sanitary evils which it is your purpose to prevent?"

It seems to us that this measure will have an effect directly opposite to the one here supposed. It is not intended, in the least degree, to usurp or to interfere with the duties of the physician, in the *cure of disease,* but to aid him in his professional efforts, and to dignify the importance of those efforts. It is, however, intended to teach the people so much of their physical organization, and so much of the influences that act upon them, that they may know, and be led to avoid, the *causes of disease,* and thus escape the infirmities, the sufferings, and the consequences of sickness. This measure will teach the people to obtain proper medical advice when they are sick, and not to tamper with themselves or with their diseases, by unsuitable or dangerous remedies, nostrums or drugs, ignorant of their applicability to their own particular cases. It will lead them to understand when or in what stage of the disease, it is best to obtain professional advice; from whom to obtain it; and to discriminate between the good and the bad. Ignorance permits a cause of disease to operate unchecked until the disease itself actually invades the system; and the same ignorance permits the disease to make such advances before advice is obtained, that it is often impossible to arrest it. Intelligence, on the other hand, understands and avoids the causes of disease; or if disease should happen to have made its attack, the same intelligence will require medical advice of the proper kind at the commencement of the disease, when advice is most useful, and when the power of medical remedies is most decisive. And this intelligence will preside over all the domestic management of the sick room; and thus second all the efforts of the medical adviser, and give all possible effect to the reme-

dies used for the expulsion of the disease. Ignorance and assumption constitute the essence of quackery; intelligence and a desire to do right, contemn it; and this measure is designed to prevent the former, and promote the latter.

8. *It may be said,*—"If you say so much about health and disease you will excite the alarm of the people, and create more disease than you prevent. It is better to let a place that is unhealthy remain so, unimproved, than to alarm the people about it."

If a place is unhealthy, and on that account an improper place of residence, does not a feeling of common humanity require that it should be known? If people are on the brink of a dangerous precipice, shall they not be told of their danger? —shall they be permitted to pursue their course to destruction, for fear of exciting their alarm? Is not a knowledge of their condition their only safety? The objection, in our judgment, instead of being a reason for the rejection of this measure, is a powerful one for its approval. "To be forewarned is to be forearmed." It is only those who know their capabilities and their liabilities,—who know their dangers and means of removal or escape, that are confident and unalarmed. The ignorant, unconscious of the means of mitigation, are more likely to be timid, alarmed, and to be overpowered with groundless fears, on the approach of danger.

Suppose that it should be ascertained, after careful and particular investigation, that a certain locality in the State is unhealthy,—that in that place certain influences exist, and certain diseases prevail, that destroy, unnecessarily, a great amount of life, and produce a great amount of physical debility, and incapacity for labor. What is duty in such a case? to permit the evil to remain unexposed, and the destruction of life and happiness to continue unchecked? or to make known to the people the exact circumstances in which they are placed, the causes of the sanitary evils which they suffer, and the means of removal? Would not this knowledge lead them to adopt those precautionary means which would reduce the amount of the evil, as their only safety? or, if this were impossible, induce them to seek some other place of abode? and under such cir-

cumstances would not such a removal be a duty? Self-preservation on their part, and philanthropy on ours, say so; and so in our judgment this objection is removed and rendered powerless.

9. *It may be said,*—"It will interfere with Divine Providence."—"It was to be so."—"It was so ordered."—"If we are to die of cholera, typhus, consumption, or any other disease, it must be so,—it is useless and improper for us to interfere."

This is an old sentiment. It has formed a part of religious belief in different nations, from remote antiquity to the present time. Death, whether it come in the shape of a plague, mowing down its thousands, or as a solitary messenger, slowly wasting or suddenly destroying the individual, has been considered by many as the special Providence of God, with which we ought not and cannot interfere. As late as 1720, when inoculation for the small-pox, as a protection against the disease in the natural way, was introduced into Boston, it was strongly opposed; and one reason given was, that it would interfere with this Providence. And even in our day some consider it a disobedience to a Divine command,—"in sorrow thou shalt bring forth,"—to inhale ether or any other agent to mitigate pain, or to alter the character of labor!

We shall not attempt a discussion of any theological or philosophical question, relating to the providential agency manifested by the Supreme Governor of all things, in presiding over and governing the universe which he has made; but we would view this great matter of life and health in the same light that we view all other matters with which they are connected, and over which this providential agency is extended. Could we see clearly the operation of cause and effect, we should see wise laws wisely administered in every event that takes place in the universe. The husbandman does not sit down by the side of his field, and wait until the time of the harvest; and if he does not receive a crop, when he did not sow his seed; or if he did sow, when he neglects the proper care of the growing plant to protect it from injury,—from weeds, noxious agents, or "filth" of any kind,—say "it was to be so." *His* agen-

cy, *his* care, *his* labor, is necessary to success. So in almost every event of practical life, we act in direct opposition to the very sentiment of this objection. If "it was to be so" is to be written upon every effect, why do we send for a physician when we are sick? Why do we take food to preserve life, or use means to cure disease? Why do we not let causes take care of themselves? Every one, in applying the objection to practical life, must see its fallacy. We believe that "God helps those who help themselves," and none others. It was a maxim of Dr. Chalmers, that "man should trust in God as if God did all, and labor themselves as if man did all."

Pain, suffering, and the various physical evils to which we are exposed, may not seem to be a necessary part of the scheme of nature, but only as incidental to it. They result from the violations of her laws; and are permitted for wise purposes, perhaps for the discipline and development of our physical and moral powers. In the operation of epidemic diseases some innocent may suffer; but they are individual exceptions to the general rule; and they come like drought or blight upon the labors of the honest husbandman. It is easy to perceive that the sources of many, even a vast majority of these evils, may be removed by those who suffer from them; and that they do not lie so deep that human agency cannot discover and destroy them. Man has a power to wield over and to expel disease. It has been asserted, by high authority, that "it would be possible to banish nearly all disease from the earth, and to restore man to his pristine vigor. If such a belief be true, that afflicting contrast between the sufferings of mankind, and the beauty and beneficent ordering of the universe, disappears. The source of the contrast is found to be within us,—the fountain of the evil is in ourselves. We are our own tormentors, and are not merely the prey and unresisting victims of powers higher than ourselves."[1]

[1] "So indispensable an element is health in all forms of human welfare, that whoever invigorates his health has already obtained one of the great guaranties of mental superiority, of usefulness, and of virtue. Health, strength, and longevity, depend upon immutable laws. There is no chance about them. There is no arbitrary interference of higher powers with them. Primarily our parents, and secondarily ourselves, are responsible for them. The providence of God is no more responsible, because the virulence of disease rises above the power of all therapeutics, or because one quarter part of the human race die before completing the age of one year,—die before completing one seventieth part of the term of existence

10. *It may be said,*—"We acknowledge that all you say is reasonable and cannot well be gainsayed; but we are a business-like, a money-making, and money-loving people. We are too much occupied to consider these matters. So many other things take up our attention that we hav'n't time to examine, much less to carry out your measure; our people are not up to it yet."

We are fully aware of the prevailing tendencies of the public mind, and of the indifference and apathy with which subjects relating to health are generally regarded. It is only in times when epidemic diseases prevail, or when we are reminded of their effects by our own sufferings or losses, that we are excited and interested. We are too much inclined to consider health as a matter "belonging to the doctors and not to us," and to depend upon them for a supply; that money is best obtained and time is best employed, when the dollar is sought, and desire is gratified, without regard to the sanitary consequences of any particular mode of doing it. Some strange anomalies and inconsistencies are found in society as at present constituted.

"*Money-loving!*" And is this the only object of life? Are there none that overlie it? And even if it be uppermost, are we pursuing the best means to obtain it? It is true that most of us, when selecting an occupation, a place of business, a place of residence, do not inquire into its sanitary influences, as we should do if we acted wisely: if it promises money

allotted to them by the Psalmist;—I say the providence of God is no more responsible for these things, than it is for picking pockets or stealing horses."

"Health is earned,—as literally so as any commodity in the market. Health can be accumulated, invested, made to yield its interest and its compound interest, and thus be doubled and redoubled. The capital of health, indeed, may all be forfeited by one physical misdemeanor, as a rich man may sink all his property in one bad speculation; but it is as capable of being increased as any other kind of capital; and it can be safely insured on payment of the reasonable premium of temperance and forethought. This, too, is a species of wealth, which is not only capable of a life-long enjoyment by its possessor, but it may be transmitted to children by a will and testament that no human judicature can set aside."

"Let the young man, then, remember, that, for every offence which he commits against the laws of health, nature will bring him into judgment. However graciously God may deal with the heart, all our experience proves that He never pardons stomach, muscles, lungs, or brain. These must expiate their offences *un*-vicariously. Nay, there are numerous and obvious cases of violated physical laws, where Nature, with all her diligence and severity, seems unable to scourge the offender enough during his life-time, and so she goes on plying her scourge upon his children and his children's children after him, even to the third and fourth generation. The punishment is entailed on posterity; nor human law, nor human device, can break the entailment. And in these hereditary inflictions, nature abhors alike the primogeniture laws of England and the Salic laws of France. All the sons and all the daughters are made inheritors; not in aliquot parts; but, by a kind of malignant multiplication in the distemper, each inherits the whole."—*Mann's Thoughts for a Young Man*, pp. 14, 23, 19.

we enter into it generally with characteristic zeal, regardless of the consequences. But how often do we have to learn that we committed an error! Instead of gradually accumulating capital, while preserving and invigorating our health, in a way which would give us a more prosperous, a happier and longer life, we make a hazardous speculation and lose the whole. This is the result of ignorance. It is worse than that. It is folly and crime thus to rush recklessly into a sea of uncertainty, when safety and competence are certainly attainable otherwise. Our thoughts receive a significant illustration in an extract of a recent letter from California. "Our party," says this writer, "four months ago, consisted of six persons, of whom two only are now alive. Two died of a disease occasioned by over-exertion and improper exposure at the diggings, on the El Dorado; one of a violent fever, occurring after a scene of frolicking and dissipation in the village; and another was murdered and robbed in his lodgings, of the few thousands of gold dust, which he had gathered by hard labor, and was about to carry back to his native New England. We, who are alive, are doing tolerably well, but work at great risk of property, health and life." If these six persons had known exactly their sanitary capability and liability, and what to do and how to do it, they might have preserved their lives. They might have wrought and acted so as to have avoided the causes of disease; or, if this had been impossible, they might have had discretion enough to abandon their suicidal residence or employment. We would not discourage, but encourage, energy and perseverance in every calling, but only in subordination to higher obligations, and in strict regard to the higher duties of self-preservation and self-invigoration.

"*We hav'n't time!*" Indeed! but we have time for other things,—for labor, for leisure, for dissipation, for almost anything we desire to pursue. And to what purpose more useful than the preservation of our lives and health can we devote a portion of our time? If time is not taken by us, and used by us, for this object, it will be taken by another agent; and we shall be prematurely deprived of an opportunity of using it ourselves for any purpose whatever. A shortened life and a

debilitated frame, will be the consequence of ignorance and inattention ; a lengthened life and an invigorated constitution, of knowledge and application. In plain English, *we have no time* means *we have no* DISPOSITION. If we have a *disposition* to examine and carry out this measure we shall find time and ability to do it, and still have enough for other purposes. "Where there is a will there is a way;" where there is a disposition there is a time,—"a time for all things."

The younger portion of society may be taught the lessons of experience which the elder portions have learned during a long life,—the physical calamities to which they have been exposed, the mistakes they have made, and the remedies of reparation they have used. They may be told the best course to pursue to invigorate and prolong their own existence. But how few apply this instruction as a guide to their own advancement in physical improvement! How great a proportion say, "it will do well enough for old people to talk so, but we are well enough as we are, we live in another age;" and they thus neglect and refuse to apply the useful instruction of others, and wait until taught by their own sad experience. They are then often too old to profit by it. They did not learn how to live, until their life-time had nearly expired.

Our people spend an indefinite amount of money in the purchase, and of time in the perusal, of the miscellaneous literature of the age; but a book, written with ever so much talent and authenticity, which contains facts relating to the in-comings and out-goings of human existence, and to the rise and fall in the tide of human welfare,—matters which concern and affect every member of society,—is too dry and statistical; it will not interest; "we hav'n't time to examine it!" An individual can announce that he sells a patent medicine, which is alleged to be a cure for all diseases, and even those supposed to be incurable ; and, by a systematic puffing, he will command the public ear and amass a fortune by drafts upon public credulity; but the man who announces, in plain and simple terms, a wise and truthful plan for avoiding disease, for living without sickness and without medicines, will be regarded with indifference, and informed that "the people

are not up to it yet." A lecturer can announce a new system of medicine, "electro-biological" or otherwise, and attract crowds of attentive listeners, night after night; but if an earnest, thoughtful, honest man, presents the simple, everyday, unvarnished principles, by which disease may be avoided and the causes of disease removed, and the facts by which these principles are demonstrated, he will find few listeners, and even those whom he is fortunate enough to obtain, may pronounce him unworthy of confidence,—a visionary dreamer.

The upsetting of a pleasure-boat, drowning several persons; a shipwreck, consigning human life to a watery grave; the bursting of a steam-boiler, scalding and scattering those within its reach; a collision on a railroad, mangling or destroying the passengers; a fire, murder, suicide, or other sudden and sad calamity, will sometimes occur and produce a general public excitement. All the facts are gathered together and minutely detailed in the newspapers; people collect in the streets, and in public and private coteries, to talk the matter over; a strong sympathy is manifested for the sufferers; judgment is immediately pronounced upon the guilty; and a loud call is made for such a punishment as shall be a warning against a repetition of the offence. But the dark stream of disease and death, is every day and every hour crowded with victims, carried down upon its everflowing current beyond the limits of time, and all are unmoved and without emotion or excitement. The people "hav'n't time to consider it;" and make no attempt to arrest or lessen the amount of disease and death that constantly float, in their onward course, on these dark waters. They never ask the question, Can this mortal current be stayed, the number of these victims lessened, the amount of this human wretchedness and human woe mitigated or prevented? And even when informed, in a demonstration as clear as meridian light, *that it may be done*, they make no effort to do it, and reply, "We are not up to it yet; you are before your time; you were born in an age too soon!"

Here we might rest our labors; but we cannot close our report without a few words of appeal which our subject suggests.

1. It appeals to *Physicians.* "The members of our profession," says an eminent medical authority, "who have already embarked in this most righteous crusade against physical corruption, cannot but feel themselves encouraged and supported by the sympathy and coöperation of the clergy; and those who have not yet taken any part in furtherance of the sanitary cause, may perhaps find a motive to exertion in the growing interest with which it is regarded by the members of other professions, and by society at large. But a sense of duty, far more than the mere force of example, ought to enlist the medical man in this holy warfare. No member of society is so cognizant as he is of the facts of the case, or better prepared to interpret and enforce them; no one is less open to the suspicion of mean or unworthy motives; and no one has such frequent opportunities of converse with men of every rank and degree. If he, who knows so much, should appear indifferent, or, what is worse,—from the bad habit of looking at the routine practice of his profession as the only honorable occupation of a medical man, and the work of palliation as his only duty,—should speak slightingly of this higher work of prevention, and carp at the efforts of others on the pretence that they are given to exaggeration; society would soon catch his tone of thought and feeling; and a cause which, on serious reflection and careful examination, he would be constrained to support, must suffer irreparable injury. If, on the other hand, he could be induced to exert himself heartily, but discreetly, in favor of sanitary measures, and to bring his influence to bear on those with whom his professional avocations place him in communication, it is impossible to over-estimate the good he may be the means of effecting." [1]

2. It appeals to *Clergymen.* Their official duties lead them to visit the sick and the dying; and they should be forcibly impressed with the truth that the architect and the scavenger,—that sanitary reforms in their various modes of operation,—are their best colleagues. They should see and feel, that removing physical suffering and raising the social and personal condition of the sufferer, is the surest way of gaining access to the

[1] British and Foreign Medico-Chirurgical Review, Vol. I, for 1848, p. 32.

heart, and of making their warnings, their instructions, and their consolations effectual; that the easiest and most permanent impressions are those made before the body and the mind become degraded in filth, stupefied by disease, or hardened and seared in guilt. In their personal intercourse and in their preaching, they should diffuse sanitary information, and urge the importance of sanitary measures. A weighty responsibility rests upon such men, and it becomes them to feel it, and to make themselves perfect masters of the subject, that they may use the information wisely and usefully in helping forward one of the greatest reforms of the age.

3. It appeals to *Educated men of all classes.* As a matter of intense interest, as a matter requiring profound investigation, as a matter of useful science, few subjects can be presented to an intelligent mind which promises more satisfactory results than the sanitary movement. For these objects alone it is worthy of being studied. But when it is viewed, in its personal and social relations to man and mind, it, in many respects, transcends all other matters. To those, who, by education, are qualified for the labor, few objects present a greater or more extended field of usefulness. Educated men and educated women too, who make themselves masters of sanitary science, may, by their pens, by their oratory, and by their personal influence, do an amount of good of which few or any of us have as yet an adequate conception. Such labors, judiciously conducted, would exert a mighty influence on the happiness of the race and its unborn millions. On such persons also rests a great responsibility. "I would beg you to consider," says Dr. Simon, "the incalculable good which may be conferred on the poorer classes of society by the direct educational influence of those in better and more enlightened circumstances. When I say that the social sanitary errors, to which I have particularly referred, would gradually but swiftly vanish under the influence of education, I do not mean that the cure would be in learning to read and to write, though these attainments, of course, would largely increase the present usefulness and market value of their possessor. The education to which I refer, as an all-important influence for sanitary progress, is

that which would consist in exhibiting to the lowest classes of society frequent practical evidences of the attainability and of the advantages of higher civilization; an education which, by models and examples, would lead them to know cleanliness from dirt, decency from grossness, human propriety from brutish self-abandonment; an education which, by sensible experience, would teach them to feel the comfort and the profit of sanitary observances, and would apply their instinct of self-preservation to the deliberate avoidance of disease." Lord Morpeth uttered this noble language in an address to his constituents, while the bill for promoting the public health was pending in parliament:—"Let my countrymen condemn me as they may, only do not let them hold me; do not let them hold the new parliament; do not let them hold themselves absolved, if they do not, either in their places as members of parliament, or as constituents keeping their representatives to their duty, insist upon early and efficient legislation on this subject."—"No one's conscience, be they ministers of state, be they members of parliament, be they members of corporations, or be they citizens of any class, ought to hold themselves harmless, if in time coming they offer any obstruction, or suffer any obstruction to be offered, to the immediate adoption of sanitary reform." [1]

4. It appeals to the *Wealthy and Philanthropic.* The munificent charities of the people of Massachusetts are well known. Many a one has given living or testamentary evidence that there runs through our society a strong current of social sympathy, and a willingness and even a desire to dispose of portions of the wealth, which has been bestowed upon us, for the relief and elevation of suffering humanity. Among the different objects which present themselves for these noble sympathies, we solicit for the sanitary movement a careful examination. In our judgment no object is of more paramount interest and importance. Money used in collecting and diffusing sanitary information; in the establishment and maintenance of institutions designed to prevent sanitary evils; and in the various modes of operation which may be devised and carried

[1] Journal of Public Health, Vol. I, p. 23.

forward by energetic and wise men, would prevent an amount of evil, and would accomplish an amount of good, promised by few or no other means.

5. It appeals to the *People.* This measure is, unlike many others, limited in its design and local or partial in its application. It reaches, and is intended to reach, every person in every part of the State. If adopted and properly carried into operation it will be universally felt,—by the professional man, the artizan and the laborer, by the rich and the poor; and the general salutary effects will be gradual but perceptible and great, upon the collective interests of the whole State, and upon the social and personal interests of each individual. Every man in every station has a direct interest in its success; and every one should do all in his power to establish and make it successful. Every one should, as far as possible, endeavor to understand the character and design of the measure, and should commend its principles to others; he should unite in forming local sanitary associations; and in obtaining the passage of wise sanitary laws and regulations, and he should assist the public authorities in carrying them into operation. Every person should endeavor to reform whatever sanitary evils may exist in his own person and habits, and those of his family and neighborhood. And by these means the sanitary movement will be accelerated, and sooner accomplish the high and noble purposes for which it is destined.

The sanitary reform we advocate is not like some of the popular reforms of the age. It rests upon no visionary theories, conceived alone in the closet, or by some impracticable enthusiast. It aims at the establishment of no abstract principle, with no definite, practical bearing or application. It is not radical in its character or tendency; does not seek to overturn nor upturn any social, political or religious sentiment or institution; nor abrogate any constitutional or statute law. It interferes with no man's rights,—pecuniary, social, political or religious. But it takes things as they are; looks upon man as it finds him; allows him to enjoy the institutions with which he is favored; and *gives him the means of living longer, and of enjoying more while he does live.* There is in this no tran-

scendentalism, or other ism or ology, to which any reasonable objection can be made; though it transcends, in its simplicity, in its practical utility, and its substantial, everyday, universal benefits, all other reforms. Every person, in every station, can do something to promote this reform; and every such effort, wisely directed, will increase the amount of his own individual enjoyment, and add to the aggregate enjoyment of the people of the whole Commonwealth.

6. It appeals to the *Periodical Press.* In this country almost every adult reads. Indulgence in the luxury of a newspaper is a universal characteristic of our people; and by the power of steam the press is able to furnish this luxury in an unprecedented manner and in any desirable quantity. We have watched with admiration, but not without fear, the growth and influence of the mighty power of the free periodical press. It educates, sways, shapes, and carries backward or forward, many an individual, and often the public, too, in a career of infamy or in a career of glory. It assumes an immense responsibility; and every press should feel it, and wield its influence for good and not for evil.

We have stated (p. 46) that the periodical press generally, in England, has been in favor of sanitary reform. The "Times," the "Morning Chronicle," the "Daily News," the leading papers of Great Britain, and the exponents and guides of public opinion in their respective spheres, and the other less prominent publications of the daily press, as well as periodicals of a different class, have advocated the cause with a talent, discretion and perseverance, which reflect upon them the highest honor. The combined influence of the excellence of the cause, and of the force of public opinion, has silenced all opposition; and sanitary reform has now taken its place among the most prominent subjects of interest among all classes of people throughout the kingdom.

The subject appeals to the periodical press in this country to imitate so noble an example. It is a subject bounded by no sectional interests and no party lines, but is of universal concern and of unbounded application; and one in which every press, of any character, may safely and properly embark. Every

one that aids in its promotion advocates a measure which certainly can do no harm, and may,—judging from all past experience,—do immeasurable good; and every one that opposes it, or throws obstacles in the way of its advancement, lends its aid, not only to defeat a harmless measure, but one designed to promote the progress and elevation of society and the best interests and well being of the human race. It will be an earnest of success if the periodical press shall zealously engage in this enterprise, as it will certainly find it for its interest to do, and support and defend the sanitary movement with the same talent and energy that is devoted to matters considered of the highest importance. Editors will then have discharged somewhat of the responsibility which devolves upon them as guides of public opinion and well wishers to humanity.

7. It appeals to *Towns and Cities.* On the municipal authorities of towns and cities, depends the immediate execution of all sanitary laws and regulations. They are required to perform an important duty. Thorough knowledge of the condition of the people, and wise adaptation and administration of sanitary measures, will benefit and bless them. But blundering ignorance, or inconsiderate measures, or unwise administration, will not do it. Life, health, physical happiness, and even the moral condition of a town, may depend, in some degree, upon the adoption or rejection of proper sanitary regulations. An immense responsibility then rests upon these local authorities. And this impression should abide upon them, and they should be led to act accordingly. If they do not it will be known. Cholera in one district slays its thousands or its tens of thousands, and yet in another cannot find a single victim; and the cause of this difference is attributable to certain sanitary conditions present in one case,—absent in the other. Cholera, typhus, consumption, and other diseases, are "health inspectors, that speak in language which none can misunderstand; they visit persons on polluted rivers, the neglected lunatic in his cell, the crowded workshop, the establishments for pauper children, the sides of stagnant sewers, the undrained city, the uncleaned street, the cellar and the attic, as well as the fair open quarters which strangers frequent and admire.

The oversights, the errors, the crimes of persons who in responsible offices have charge of the health and life of men, are proclaimed aloud by their inexorable voices."[1]

8. It appeals to the *State*. Under our constitution and laws "each individual in society has a right to be protected in the enjoyment of his life." This may be considered in a sanitary as well as a murderous sense. And it is the duty of the State to extend over the people its guardian care, that those who cannot or will not protect themselves, may nevertheless be protected; and that those who can and desire to do it, may have the means of doing it more easily. This right and authority should be exercised by wise laws, wisely administered; and when this is neglected the State should be held answerable for the consequences of this neglect. If legislators and public officers knew the number of lives unnecessarily destroyed, and the suffering unnecessarily occasioned by a wrong movement, or by no movement at all, this great matter would be more carefully studied, and errors would not be so frequently committed.

Massachusetts has always been eminent among the American states. Her metropolis has ever been the metropolis of New England. Her example has been imitated and her influence has been felt, wherever the sons of New England are found, or the name of New England is known. Her deeds are such as to justify even her own sons for an allusion to them.

Her puritan forefathers established the first system of self-government, combining law and order with liberty and equality, and based upon pure morality, universal education and freedom in religious opinion, as the only foundation which can insure its permanency and prosperity. And in her cradle was rocked the first child that drew its first breath under its benign influence.

She has her Concord, her Lexington, and her Bunker Hill, all marked as the first battle-fields in that great struggle which severed the children from the parent, and made them free; into their soil was poured the blood of the most worthy and the most noble patriots the world has ever known; and "the

[1] Quarterly Return, Registrar General, April, 1849, p. 1.

bones of her sons, falling in the great struggle for independence, now lie mingled with the soil of every state from New England to Georgia, and there they will lie forever."

The thirteen united colonies furnished for the regular service of the revolutionary army, besides militia, 231,779 men,—an average of 17,830 each. Of these, Massachusetts furnished 67,907, or 29 per cent. of the whole, 35,968 more than any other state, and 50,077 men more than, or nearly four times, her equal proportion.[1] And she poured out her treasure for the outfit and support of her sons in the regular or militia service, and for the support of their families whom they left behind, and for other public purposes, in nearly the same proportion, and with the same liberal hand, as she did her physical force and her blood.

She established, more than two hundred years ago, and near the beginning of her existence, free schools, open alike to all; and they have been cherished and supported, from that time to the present, by money drawn from the treasuries of towns, replenished by taxes on the inhabitants. She expended in this way, last year, for these free schools, $830,577 33,—a sum equal to $3 87 for every child in the State between the ages of four and sixteen. The whole State has been dotted over with schoolhouses, like "sparkling diamonds in the heavens," giving intellectual light to all that come within their sphere.

She established in the United States the first system for the public registration of births, marriages and deaths, by which the personal history and identity, and the sanitary condition of the inhabitants, may be ascertained. She founded the first Blind Asylum; the first State Reform School; and aided in founding the first Deaf and Dumb Asylum; and her money, public and private, has flowed freely in the support of all the noble charities and religious enterprises of the age.

One of her sons first introduced into the United States the remedy of vaccination for the prevention of small-pox, which has deprived that terrific disease of its power, whenever used, and rendered its approach generally harmless. Another of her

[1] Niles's Register, Vol. XXXVIII, for July 31, 1830, p. 399. American Almanac, Vol. I, p. 187; Vol. II, p. 112.

sons has the honor of making the great discovery of etherization, by means of whose wonderful capabilities the surgeon's instrument is deprived of its sting, and labor of its sorrow; the operator is permitted to pursue his work undisturbed, while the patient remains passive, unconscious, and unmoved by the horrors which, without it, might be inflicted. The blessings of this great prevention of human suffering are already acknowledged and felt the world over.

For these and very many other useful and honorable deeds, which might be specified, she has been named, by distinguished men of other states and countries, "the forefather's land," "the moral state," "the enlightened state," "the patriotic state," "the philanthropic state," "the leading state," "the pattern state," "the noble state," "the glorious old Bay state." And many an ejaculation has gone up in all sincerity, "God bless her;" "God save the Commonwealth of Massachusetts!"

"There she stands;" a bright morning star in the system of the Union. On the pages of her history are recorded the noble deeds which have given her a good name and rendered her glorious. But her people demand at her hands a more full enjoyment of life, and a more abundant diffusion of its blessings; and no more noble and honorable and glorious page can anywhere be found, than that which shall record the adoption of some simple but efficient and comprehensive plan of Sanitary Reform; by which the greatest possible amount of physical power may be produced, the greatest possible amount of physical suffering may be prevented, and the greatest possible amount of physical, social and moral enjoyment, may be attained. "This is the true glory which outlives all other, and shines with undying lustre, from generation to generation, imparting to its works something of its own immortality."

All which is respectfully submitted.

LEMUEL SHATTUCK,
N. P. BANKS, Jr.,
JEHIEL ABBOTT,
Commissioners.

Boston, *April* 25, 1850.

BILL DRAWN BY THE COMMISSION, AND RECOMMENDED TO THE LEGISLATURE FOR ENACTMENT.

[See this Report, pp. 48–55, 109–119, 133, 242, and 284.]

An Act for the Promotion of Public and Personal Health.

BE it enacted by the Senate and House of Representatives, in General Court assembled, and by the authority of the same, as follows:

Sect. 1. His Excellency the Governor, with the advice and consent of the Council, shall appoint seven persons, who, together with the Governor, and the Secretary of the Board of Education, *ex officiis*, shall constitute and be denominated the General Board of Health; and the persons so appointed shall hold their offices for the term of seven years: *provided*, that the person first named in said Board shall go out of office at the end of one year, the person next named shall go out of office at the end of two years, and so of the remaining members, one retiring each year, and in the order in which they are named, until the whole Board be changed. And the Governor, with the advice and consent of the council as aforesaid, shall fill all vacancies in said Board, which may occur from death, resignation or otherwise. Any member who resigns, or whose term of office has expired, may, if duly qualified, be reappointed.

Sect. 2. The said Board shall meet in January, April, July, and October, in each year, and at such other times as they may deem necessary or expedient.

SECT. 3. They shall appoint a competent person to be the Secretary of the Board, and shall also appoint such other persons, or employ such temporary assistance, as may be necessary to carry into execution the sanitary laws of the State, under their superintendence; and every such person so appointed or employed shall hold his office during the pleasure of the Board. The Board shall fix the compensation of all persons so appointed or employed: *provided*, that the members of said Board shall receive no compensation for their own services. The salary of the Secretary shall be hundred dollars per annum, which, together with his incidental expenses and those of the Board, while in the discharge of their official duties, shall be paid by the State, on certificates signed by the chairman and Secretary.

SECT. 4. The said Board shall perform the following duties:—

1. They shall have the general superintendence of the execution of the sanitary laws of the State.

2. They shall direct the Secretary of the Board in the discharge of his duties.

3. They shall consider and decide upon sanitary questions, submitted to them by the State, by cities, by towns, and by the Local Boards of Health.

4. They shall advise the State as to the location and erection of public buildings, and as to the sanitary regulations of public institutions.

5. They shall, at least once in each year, visit and ascertain the sanitary condition of the several public charitable institutions of the State.

6. They shall prepare and furnish, at the expense of the State, to the several Local Boards of Health, all necessary blanks for the purposes of this act.

7. They shall, from time to time, issue instructions to the several Local Boards, as to their powers and duties,

and shall suggest and recommend local sanitary rules and regulations.

8. They shall superintend each enumeration of the inhabitants of the State, and the preparation of the abstracts of the same, authorized by the constitution and laws.

9. They shall lay before the Legislature, annually, in a printed form, a report, containing an abstract of their proceedings, and of their receipts and expenditures, together with the Report of the Secretary of said Board; and shall accompany the same with such remarks, as their observation, experience, and reflection may suggest, as to the sanitary condition of the State, its institutions, and its inhabitants; and recommend the adoption of such useful sanitary measures, as in their judgment may lead to improvement.

Sect. 5. They may expend fifty dollars, annually, in the purchase of books and works, relating to public health and to the causes and prevention of disease; which books and works, together with such other books, works, and documents, as may be obtained in exchange or by donation, shall be kept in the office of the Secretary of the Board, and be the property of the State.

Sect. 6. The Secretary, under the general direction of the Board, shall perform the following duties:—

1. He shall keep full and accurate accounts of the receipts and expenditures of the Board.

2. He shall, when directed by the Board, make a sanitary survey of a particular town, or part of the State; and collect information as to its sanitary condition.

3. He shall have all the authority by law given to, and perform all the duties imposed upon, the Secretary of State, relating to the registration and return of births, marriages, and deaths.

4. He shall superintend each enumeration of the in-

habitants of the State, and the preparation of the abstracts of the same, authorized by the constitution and laws.

5. He shall arrange the official written and printed reports and documents, obtained from Local Boards of Health and other public associations, and from private individuals; and cause them to be bound and indexed for convenient reference. And he is authorized to exchange the printed documents of the Board for other sanitary works, printed in this and in foreign countries.

6. He shall perform such other duties appertaining to his office, as may be required by the Board.

7. He shall prepare and lay before the Board, annually, in a printed form, a report containing an abstract of the information obtained.

8. He shall diffuse, as far as practicable, throughout the Commonwealth, information relating to the sanitary condition of the State and its inhabitants; to the end that the laws of health and life may be better understood, the causes of disease ascertained and removed, the length of human life extended, the vital force and productive power increased, and the greatest amount of physical improvement and happiness attained and enjoyed.

Sect. 7. The said Secretary is authorized and may, with the approval of the Board, employ such assistance as shall be necessary to enable him to discharge the duties of his office.

Sect. 8. The mayor and aldermen of each city, and the selectmen of each town, shall appoint three, five, or seven persons, resident citizens thereof, who shall constitute and be denominated the Board of Health of the Town, or the Local Board of Health. The mayor of the city, the chairman of the selectmen of the town, and the

registrar of births, marriages and deaths, or the town clerk where no such registrar exists, shall be, *ex officiis*, members of said Board. And the persons so appointed shall take an oath faithfully to perform the duties of their office; and they shall hold their said offices for three years, if the said Board is fixed at and consists of three members, as aforesaid; or for five years, if it is fixed at and consists of five members; or for seven years, if it is fixed at and consists of seven members: *provided*, that the person first named in said Board shall go out of office at the end of one year, the person next named shall go out of office at the end of two years, and so of the remaining members, one retiring each year and in the order in which they are named, until the whole Board be changed. And the mayor and aldermen, or the selectmen as aforesaid, shall fill all vacancies in said Board, which may occur from death, resignation or otherwise. Any member who resigns, or whose term of office has expired, may, if duly qualified, be reappointed.

Sect. 9. The said Local Boards shall carry into execution, within their respective jurisdictions, the sanitary laws of the State, and the orders of the General Board of Health; and may, if need be, in the discharge of their duty, examine persons under oath, which oath they are authorized to administer. They shall endeavor, as far as practicable, to prevent disease and save life, by removing the causes of disease and mortality; and promote health and prolong life, by adopting and carrying into execution useful sanitary measures, rules and regulations.

Sect. 10. The said Local Boards shall meet in January, April, July, and October, in each year, and at such other times as they may deem necessary or expedient.

Sect. 11. The Board of Health of any town of more than ten thousand inhabitants, may expend forty dollars

annually, and of any town of less than ten thousand inhabitants, twenty dollars, annually, in the purchase of books or works relating to public health, and to the causes and prevention of disease; which books and works, together with such other books, works, and documents as may be obtained in exchange or by donation, shall be kept in the office of the Secretary of the Board, and be the property of the town; *provided*, that in estimating the number of inhabitants for the purposes of this act, the last census, national or state, shall be the basis of computation.

Sect. 12. The said Board shall, from time to time, appoint one of their number to be Secretary; and also shall, if need be, appoint another competent member to be Medical Health Officer; and another to be Surveyor. And they shall appoint such other officers, not of the Board, and employ such other persons, as may be necessary to carry into execution the sanitary laws of the State, and the sanitary ordinances and regulations of the town. They shall fix the compensation of each person so appointed and employed, subject to the approval of the mayor and aldermen of the city, or the selectmen of the town: *provided*, that said compensation shall not exceed the amount usually paid for similar services in the town. And every such officer and person so appointed and employed shall hold his office during the pleasure of the Board.

Sect. 13. It shall be the duty of the Secretary to keep a record of the proceedings of the Board, and an accurate account of their receipts and expenditures, and to perform such other services as usually pertain to the office; and to preserve and transmit to his successor in office, all records, written and printed documents, papers and books, belonging to the office or to the Board.

SECT. 14. It shall be the duty of the Medical Health Officer to ascertain the existence and prevalence of sickness and diseases of different kinds, and particularly of zymotic, or epidemic, endemic and contagious diseases; to observe their prevalence and mortality in each year, and each season of the year, as compared with other years and seasons; in each district of the town, as compared with other districts or with other places; and in each class of persons, as compared with other classes; and to endeavor to ascertain any atmospheric, local, or personal causes of the temporary increase or decrease of disease and mortality. He shall point out local nuisances or personal causes likely to produce disease, or otherwise to injure the health of the inhabitants; suggest remedies; perform such other services, of a like nature, as the Board may require; and make reports on all these matters to the said Board.

SECT. 15. It shall be the duty of the Surveyor to prepare, under the direction and for the use of the Board, and for public inspection, a map of the town, or any section of the town, on which shall be marked, as far as practicable, the location, level, and grade, of roads, streets, lanes, and courts; plans for drainage and sewerage; the natural and artificial mill and other ponds; and any localities in which unfavorable sanitary influences are known to exist; and perform such other services of a similar nature, as may be required by the Board; and he shall report to the said Board on all these matters.

SECT. 16. The said Local Boards of Health are authorized to make, and whenever in their judgment the public health and safety or the public good will be promoted thereby, they shall make rules and regulations, not inconsistent with the constitution and laws of the State, for either or any of the following purposes:

1. For ascertaining the cause or causes of the death of every person who dies in the town.

2. For ascertaining, from time to time, the prevailing diseases of the town; and their atmospheric, local, and personal causes.

3. For ascertaining the prevalence and amount of sickness, among persons of different classes and occupations, and among scholars attending the public schools.

4. For preventing or mitigating diseases, especially zymotic, or epidemic, endemic, and contagious diseases.

5. For affording medical relief to persons afflicted or threatened with disease, and especially with epidemic, endemic or contagious diseases.

6. For the periodical or special vaccination of the inhabitants.

7. For removing, destroying, and preventing nuisances, dangerous to the public health.

8. For restraining and removing persons and articles, infected with the small-pox or other contagious disease.

9. For the establishment, location, and management of hospitals, for the accommodation of persons sick with contagious or malignant diseases.

10. For the construction and management of sinks, ash-pits, privies, cesspools, drains, and common sewers; and for the removal of house-dirt, offal, night-soil, street-dirt, and other filth.

11. For cleansing and purifying any vessel, building, lot, or other place; or any article in a condition endangering the public health.

12. For the location, and for preventing the location, of pigsties, slaughter-houses, chemical works, and any trade or employment, offensive to the inhabitants or dangerous to the public health.

13. For the warming and ventilation of schoolhouses and other public buildings; and for preventing the sani-

tary evils which arise from over-crowded boarding or lodging-houses, and from cellar dwellings.

14. For preventing the sale of any article of food or drink, unwholesome or dangerous to the public health.

15. For preventing or mitigating the sanitary evils, arising from the sale of intoxicating liquors; and from haunts of dissipation.

16. For preventing the sale of adulterated medicines, drugs and liquors, dangerous to the public health.

17. For the sanitary management of cemeteries, and other burial-places; and for the interment of the dead.

18. For the public registration of births, marriages and deaths in the town, required by the laws of the State.

19. For executing any sanitary order of the General Board of Health relating to the town or its inhabitants.

Sect. 17. The Board of Health of any seaport town may establish the quarantine to be performed by any vessel arriving within the harbor of the town; and may make such quarantine regulations, relating to any vessel, and to the passengers or articles on board of the same, as they shall judge necessary for the health and safety of the inhabitants;—or two or more towns may, at their joint expense, and for the common benefit, make and establish such regulations. And any Board of Health may examine, under oath, the master or any seaman or person on board any vessel, suspected of coming from a sickly port, or of having sickness on board during the voyage, or of having goods or articles on board which may occasion sickness. And all expenses incurred on account of any person, vessel, or goods, under any quarantine regulations, shall be paid by such person, or the owner of such vessel or goods, respectively.

Sect. 18. When any householder shall know that any person within his family and when any physician shall know that any person whom he visits, is sick with

the small-pox, or any other contagious or malignant disease, dangerous to the public health, such householder and such physician shall immediately give notice thereof to the Board of Health of the town, in such manner as they shall prescribe.

Sect. 19. Notice shall be given by the Local Boards of Health of all regulations made by them, by publishing the same in some newspaper of the town, or where there is no such newspaper, by posting them up in some public place or places of the town; and such notice of such regulations shall be deemed legal notice to all persons.

Sect. 20. It shall be the duty of every magistrate and other civil officer, and of every inhabitant of the State, to observe and assist in carrying into execution the orders, rules and regulations of the General and Local Boards of Health, and to aid the said Boards and their authorized agents, in the performance of their respective duties.

Sect. 21. The said Boards of Health, if it shall appear to them necessary or expedient, are authorized to require the sheriff of the county or his deputy, the marshal of the city, or any constable of the town, to perform any of the following duties:

1. To remove or destroy any article, decayed, putrid, or otherwise dangerous to the public health; or any other nuisance or cause of disease.

2. To remove any person or article infected with contagious or malignant disease, from one place to another.

3. To break open and enter in the day time any house, shop, or other building, or place, containing a person or article infected with small-pox or other contagious disease; or containing any nuisance dangerous to the public health.

4. To impress and take up convenient houses, lodging, nurses, attendants and other necessaries for the accommodation, safety, and relief of the sick.

SECT. 22. The charges for removing and cleansing any articles, and of securing the same, and of cleansing any house or other place, shall be paid by the owners thereof, at such rates and prices as shall be fixed by the Board of Health, under whose direction the same was done.

SECT. 23. Whenever the sheriff of the county or his deputy, the marshal of the city, any constable of the town, or other officer, shall impress any men, or shall use any house, store or other place, or any property, for the accommodation or benefit of the sick, or for the storage of infected articles, as provided for in this act, the several parties interested shall be entitled to a just compensation therefor, to be paid by the town for which such persons have been employed, or for which such property has been used.

SECT. 24. All necessary expenditures incurred by any Local Board of Health, in the discharge of their official duties, shall be paid by their town or city, after being audited by the Secretary of the Board, and certified to be correct by a majority of the other members: *provided*, that in making any such expenditure of more than fifty dollars, in towns of less than two thousand inhabitants; and of more than one hundred dollars, in towns of more than two thousand and less than five thousand inhabitants; and of more than five hundred dollars, in towns of more than five thousand inhabitants, the said Board shall first obtain the approval of the selectmen of the town, or the mayor and aldermen of the city.

SECT. 25. Whenever any malignant or contagious disease shall prevail as an epidemic in any town, the Local Board of Health shall notify the General Board of Health of the same; and the said General Board of Health shall adopt, recommend, or carry into execution,

such measures of prevention or mitigation, as they shall deem necessary or expedient.

Sect. 26. Any person who shall violate any order or regulation, prescribed in the sixteenth and eighteenth sections of this act, or who shall obstruct any member of any Local Board of Health, or any person acting under their authority, in the discharge of his duty, shall be liable to a penalty not exceeding one hundred dollars for each offence; and any person, who shall violate any of the provisions of the seventeenth and twenty-first sections, shall be liable to a penalty not exceeding five hundred dollars for each offence.

Sect. 27. Each of the said Local Boards of Health shall, in the month of January, annually, prepare and submit to the town, or to the city council, at the next meeting thereafter, a written report, containing an abstract of the proceedings and of the receipts and expenditures of the Board, during the next preceding year ending December thirty-first; and shall accompany the same with a statement of such facts and observations, as will exhibit the sanitary condition of the town and its inhabitants; and shall recommend such measures of improvement, as they may deem necessary or expedient; and they shall transmit a copy of their report, in a written or printed form, to the General Board of Health. And all reports printed by order of towns shall be in octavo form, on paper and page of uniform size, similar to the public documents of the State, and convenient for binding; and all written reports shall be on letter paper of common size and convenient for binding.

Sect. 28. Any town, which shall neglect to appoint a Board of Health annually, as required by this act, shall be liable to a penalty not exceeding one hundred dollars for each neglect; and the Board of Health of any town which shall neglect to make and transmit the report

required by the twenty-seventh section hereof, shall be liable to a like penalty.

SECT. 29. All petitions and complaints concerning sanitary matters, shall be made and presented, in a written or printed form, to the Local Board of Health, or their authorized agent; and the object of all such petitions shall be immediately considered and acted upon; and it shall be the duty of every person who knows of the existence of any cause of disease, or of any matter which may properly come under the cognizance of the Board, to make it known.

SECT. 30. Whenever any nuisance, filth, or cause of disease shall be found on private property, the Board of Health shall order the owner, or occupant thereof, to remove the same at his own expense, within twenty-four hours, or such other time as they shall deem reasonable, after notice served, as provided in the succeeding section; and if the owner or occupant shall neglect so to do, he shall forfeit a sum not exceeding twenty dollars, for every day during which he shall knowingly permit such nuisance or cause of disease to remain after the time prescribed, as aforesaid, for the removal thereof.

SECT. 31. The order mentioned in the preceding section shall be communicated by a written notice, served personally upon the owner or occupant, or his or her authorized agent, by any person competent to serve a notice in a civil suit; or such notice may be left at the owner's, occupant's, or agent's last and usual place of abode, if the same be known, and is within the State; and if the owner's, or agent's residence is unknown, or without the State, the premises being unoccupied, then such notice may be served by posting up the same on the premises, or by publishing the same in such manner, and for such length of time, as the Local Board of Health shall deem expedient.

Sect. 32. If the owner or occupant shall not comply with the order above mentioned, the Board of Health may cause the said nuisance, filth, or cause of disease, to be removed or destroyed, and all expenses incurred thereby shall be paid by the said owner or occupant, or by such other person as shall have caused or permitted the same, if such owner or occupant, or such other person shall have had actual notice from the Board of Health, of the existence of said nuisance, filth, or cause of disease.

Sect. 33. All expenses incurred by any town or city in the removal of nuisances, or for the preservation of the public health, and which are recoverable of any private person or corporation, by virtue of any provisions of law, may be sued for and recovered in an action of debt, before any court having jurisdiction.

Sect. 34. Any fines and forfeitures recovered under the twenty-eighth section of this act, shall enure to the use of the State; and all other fines and forfeitures incurred under the general laws, or the special laws applicable to any town or city, or the ordinances, by-laws, and regulations of any town, or of the Board of Health of any town, relating to health, shall enure to the use of such town; and all such fines may be recovered by complaint in the name of the treasurer, before any justice of the peace of the county, or police court of the town or city, in which the offence may have been committed.

Sect. 35. Any person injured, either in his comfort or the enjoyment of his estate, by any nuisance, may have an action on the case, for the damage sustained thereby; in which action the defendant may plead the general issue and give any special matter in evidence.

Sect. 36. The court of common pleas, or any one of the justices thereof, in term time or vacation, may, in all cases, either before or pending a prosecution, for a com-

mon nuisance, affecting the public health, issue an injunction to stay or prevent the same, until the matter shall be decided by a jury or otherwise; and may issue all such other writs and processes, and make all such orders and decrees according to the course of proceedings in chancery, as may be necessary or proper to enforce such injunction; and may dissolve the same when the court or any one of the said justices shall think it proper.

SECT. 37. Persons may be complained of, and indicted by the grand jury having jurisdiction, for a common nuisance, injurious to the public health; and when any person shall be convicted on such indictment, the court may, in their discretion, order the nuisance to be removed, or destroyed, at the expense of the defendant, under the direction of the Board of Health of the town where the nuisance is found; and the form of the warrant to the sheriff, or other officer, may be varied accordingly.

SECT. 38. The Local Boards of Health shall have all the authority, and may perform all the duties imposed by law upon justices of the peace, by "an act in addition to an act to provide for the confinement of idiots and insane persons," passed April sixth, eighteen hundred and thirty-eight.

SECT. 39. The word "town," in this act, may be construed to include all cities except in cases in which such construction would be repugnant to any provision herein contained.

SECT. 40. All acts and parts of acts inconsistent with the provisions of this act, are hereby repealed.

APPENDIX TO SANITARY REPORT.

I. Titles of Acts relating to Public Health, passed by the State of Massachusetts.

1692. An Act for Prevention of Common Nuisances arising by Slaughter-houses, Still-houses, &c., Tallow-chandlers, and Curriers. *Act and Laws of Province of Massachusetts Bay. Ed.* 1759 and 1771, p. 15.

1696. Chap. 6. An Act in addition to an Act for Preventing of Common Nuisances arising from Slaughter-houses, Still-houses, &c., p. 68.

1700. An Act directing the Admission of Town Inhabitants, p. 125.

1701. An Act providing in case of Sickness, p. 135. Repealed 1797.

1702. An Act for appointing Commissions of Sewers, p. 142. Repealed 1796.

1708. An Act in Addition to and Explanation of the Act for Prevention of Common Nuisances, p. 158.

1709. An Act for Regulating of Drains and Common Shores, p. 161. Repealed 1796.

1710. An Act explaining and enlarging of the act for prevention of Common Nuisances arising by Slaughter-houses, Still-houses, &c., Tallow-chandlers and Curriers, p. 166.

1730. An Act empowering Courts to adjourn and remove from the Towns appointed by Law for holding Courts to other Towns, in case of sickness by Small-Pox, p. 265. Repealed 1797.

1742. An Act to prevent the spreading of Small-Pox and other Infectious sickness and to prevent the concealing the same. Repealed 1797.

1744. An Act in addition to an Act for Regulating Drains and Common Shores. Repealed 1796.

1750. An Act to regulate the Importation of *German* and other Passengers come to settle in the Province, p. 342.

1751. An Act in addition to an Act made and passed in the thirteenth year of King *William* the Third, entitled *An Act providing in Case of Sickness*, p. 356. Repealed 1797.

1757. An Act for Regulating the Hospital on *Rainsford's-Island*, and further providing in Case of Sickness, p. 375. Repealed 1797.

1758. An Act in addition to an Act entitled *An act for Regulating the Hospital on* Rainsford's-Island, *and further providing in Case of Sickness*, p. 378. Repealed 1797.

1763. An Act in addition to an Act relating to Common Sewers. Repealed 1797.

1776. An Act to prevent the Continuance of the Small-Pox in the town of *Boston*, and to license inoculation there for a limited time. Repealed 1792.

1776. An Act empowering Justices of the Court of General Sessions of the Peace in the several Counties to permit inoculating Hospitals to be erected in said counties. Repealed 1792.

1777. An Act in addition to the above Act. Repealed 1792.

1785. March 8. An Act against selling unwholesome provisions, vol. I, p. 224. Repealed 1836.

1785. June 7. An Act for preventing Common Nuisances. *Laws*, Ed. 1801, vol. I, p. 241. Repealed 1836.

1787. Feb. 28. An Act for the due Regulation of Licensed Houses, p. 374. Repealed.

1788. March 26. An Act for suppressing and punishing of Rogues, Vagabonds, Common Beggars, and other idle, disorderly and lewd Persons, p. 411. Repealed 1834. Laws 1834, p. 206.

1792. An Act providing for the establishment of Hospitals for inoculating with the Small-Pox, and for repealing all laws heretofore made for that purpose. Repealed 1793.

1793. March 15. An Act providing Hospitals for inoculation, and for preventing Infection from the Small-Pox, and for repealing several Acts heretofore made for that purpose, vol. II. Repealed 1836.

1796. Feb. 26. An Act for appointing Commissioners of Sewers, and making Provision for the better improvement of Low Lands in Certain Cases, vol. II, p 721. Repealed 1836.

1797. Feb. 20. An Act for regulating Drains and Common Sewers, vol. II, p. 752. Repealed 1836.

1797. June 22. An Act to prevent the spreading of contagious Sickness, vol. II, p. 788. Repealed 1836.

1798. Feb. 27. An Act in addition to an Act, entitled "An Act for Suppressing Rogues, Vagabonds, Common Beggars, and other idle, disorderly and lewd Persons," vol. II, p. 812. Repealed 1834.

1799. Feb. 13. An Act to empower the Inhabitants of the Town of Boston to choose a Board of Health, and for removing and preventing Nuisances in said Town, vol. II, p. 837. Repealed June 20, 1799.

1799. June 20. An Act to empower the Town of *Boston* to choose a Board of Health, and for removing and preventing Nuisances, vol. II, p. 867.

1799. June 21. An Act to empower the Inhabitants of the Town of *Salem* to choose a Board of Health and for removing and preventing Nuisances in said Town, vol. II, p. 879.

1800. Feb. 26. An Act in addition to an Act, entitled, "An Act to prevent the spreading of contagious sickness," vol. II, p. 896. Repealed 1836.

1800. March 4. An Act in addition to an Act, entitled, "An Act to prevent Common Nuisances," vol. II, p. 921. Repealed 1836.

1800. June 16. An Act in addition to an Act, entitled, "An Act to empower the Inhabitants of the Town of *Salem* to choose a Board

of Health, and for removing and preventing Nuisances in said Town;" and for repealing Part of said Act, vol. II, p. 939.

1802. Feb. 22. An Act to empower the Inhabitants of the Town of *Marblehead* to choose a Board of Health, and for removing and preventing Nuisances in said Town, vol. III, p. 44.

1803. June 18. An Act in addition to an Act, entitled, "An Act to empower the Town of *Boston* to choose a Board of Health, and for removing and preventing Nuisances," vol. III, p. 161.

1804. March 7. An Act to repeal a part of an Act, entitled, "An Act to empower the Town of Boston to choose a Board of Health, and for removing and preventing Nuisances," and for making further Additions thereto, vol. III, p. 218.

1809. June 16. An Act in further addition to an Act entitled "An Act to entitle the Town of Boston to choose a Board of Health, and for removing and preventing Nuisances." Session Laws, 1809, p. 11.

1810. Feb. 27. An Act to empower the inhabitants of the town of Plymouth to choose a Board of Health, and for removing and preventing nuisances in said town. Session Laws, 1810, p. 89.

1810. March 6. An Act to diffuse the benefits of inoculation for the Cow Pox. Session Laws, 1810, p. 204. Repealed 1836.

1810. March 6. An Act in further addition to an Act entitled, "An Act to empower the town of Boston to choose a Board of Health, and for preventing and removing Nuisances." Session Laws, 1810, p. 221.

1816. June 20. An act to empower the town of Boston to choose a Board of Health, and to prescribe their power and duty. Session Laws, 1816, p. 258.

1818. June 12. An Act authorizing the town of Charlestown to establish a Board of Health. Session Laws, 1818, p. 14.

1821. June 16. An Act to empower the inhabitants of the town of Lynn to appoint a Board of Health and for removing and preventing nuisances in said town. Session Laws, 1821, p. 588.

1822. Feb. 23. An Act to establish the city of Boston. Session Laws, 1822, p. 734.

1827. March 2. An Act authorizing the town of Cambridge to establish a Board of Health. Session Laws, 1827, p. 473.

1835. Nov. 4, 1835. REVISED STATUTES.—Went into operation, April 30, 1836.

Chap. 21. On the preservation of the public health; quarantine; nuisances; and offensive trades, pp. 207–214.

Chap. 131. Of offences against the public health, p. 742.

1837. April 20. An Act relating to Alien Passengers.

1837. April 20. An Act concerning the Public Health. *Sup. Rev. Stat.*, p. 58.

1838. April 20. An Act to repeal certain provisions of law in relation to the small-pox. *Ibid.*, p. 82.

1840. March 18. An Act concerning the small pox. *Ibid.*, p. 149.

1841. March 17. An Act in relation to main drains and common sewers. *Ibid.*, p. 196.

1842. March 3. An Act relating to the registry and returns of Births, Marriages and Deaths. *Ibid.*, p. 240.

1844. March 16. An Act relating to the registry and returns of Births, Marriages, and Deaths. *Ibid.*, p. 308.

1848. April 18. An Act to repeal certain provisions of law in relation to the small-pox. *Ibid.*, p. 451.

1848. May 10. An Act concerning Alien Passengers.

1849. May 2. An Act in relation to the Public Health. *Ibid.*, p. 549.

1849. May 2. An Act relating to the registration of Births, Marriages, and Deaths. *Ibid.*, p. 545.

1850. March 20. An Act relating to Alien Passengers. Session Laws, pp. 338 and 467.

1850. March 21. An Act in addition to an Act relating to the Public Health. *Ibid.*, 341.

STATUTES OF THE UNITED STATES RELATING TO HEALTH.

1799. Feb. 25. An Act respecting Quarantine and Health Laws. U. S. *Statutes*, Little & Brown's ed., vol. I, p. 619.

1819. March 2. An Act regulating Passenger Ships and Vessels. *Ibid.*, vol. III, p. 488.

1847. Feb. 22. An Act to regulate the Carriage of Passengers in Merchant Vessels. *Ibid.*, vol. VI, p. 127.

1848. May 17. An Act to provide for the Ventilation of Passenger Vessels and for other purposes. *Ibid.*, vol. VI, p. 220.

1848. June 26. An Act to prevent the importation of Adulterated and Spurious Drugs and Medicines. *Ibid.*, vol. VI, p. 237.

II. AN ACT TO PREVENT THE SPREADING OF CONTAGIOUS SICKNESS, PASSED JUNE 22, 1797. [*See this Report, pp.* 50, 52, 53.]

SECT. 1. *BE it enacted by the Senate and House of Representatives, in General Court assembled, and by the authority of the same*, That for the better preventing the spreading of infection, when it shall happen that any person or persons coming from abroad, or belonging to any town or place within this State, shall be visited, or shall lately before have been visited with the plague, small-pox, pestilential or malignant fever, or other contagious sickness, the infection whereof may probably be communicated to others; the Selectmen of the town where such person or persons may arrive or be, are hereby empowered to take care and make effectual provision in the best way they can, for the preservation of the inhabitants, by removing such sick or infected person or persons, and placing him or them in a separate house or houses, and by providing nurses, attendance, and other assistance and necessaries for them; which nurses, attendance, and other assistance and necessaries, shall be at the charge of the parties themselves, their parents or masters (if able) or otherwise at the charge of the town or place whereto they belong; and in case such person or persons are not inhabitants of any town or place within this State, then at the charge of the Commonwealth.

SECT. 2. *And be it further enacted*, That any person or persons coming from any place out of this State, where the small-pox or other malignant distemper is prevailing, into any town within this State, shall, when thereto required by the Selectmen of such town, within the space of two hours from the time they shall be first informed of their duty by law in this particular, give notice to one or more of the

Selectmen, or the Clerk of such town, of their coming there, and of the place from whence they came, upon pain of forfeiting, in case of neglect, the sum of *One Hundred Dollars*. And such person or persons, if not disabled by sickness, shall, within the space of two hours after warning given to him or them by the Selectmen of such town for that purpose, depart from this State in such manner, and by such road, as the said Selectmen shall direct; and in case of refusal, it shall be lawful for any Justice of the Peace in the County where such town may lie, by warrant directed to a Constable or other proper officer, or other person whom the Justice shall judge proper, to cause such person or persons to be removed into the State from whence he or they may have come. And any person removed by warrant as aforesaid, who, during the prevalence of such distemper, shall presume to return into any town of this State without liberty first obtained from such Justice, shall forfeit and pay the sum of *Four Hundred Dollars;* and any inhabitant of this State who shall entertain in his house any person warned to depart as aforesaid, for the space of two hours after notice given him of such warning by one or more of the Selectmen aforesaid, shall forfeit and pay the sum of *Two Hundred Dollars*.

Sect. 3. *And be it further enacted*, That it shall and may be lawful for the Selectmen of any town near to, or bordering upon either of the neighboring States, to appoint, by writing, under their hands, some meet person or persons to attend at ferries or other places by or over which passengers may pass from such infected places; which person or persons so appointed, shall have power to examine such passengers as they may suspect to bring infection with them, and, if need be, to hinder and restrain them from travelling, until licensed thereto by a Justice of the Peace within such county, or by the Selectmen of the town in which such person or persons may come; and any passenger who, coming from such infected place, shall (without license as aforesaid) presume to travel within this State, unless it be to return by the most direct way to the State from whence he came, after he shall be cautioned to depart by the person or persons appointed as aforesaid, shall forfeit and pay the sum of *One Hundred Dollars*; the several forfeitures aforesaid to be recovered by action of debt in any Court of Record proper to try the same,—one moiety to and for the use of the town where the offence shall be committed—the other moiety to the use of the person who may sue for the same.

Sect. 4. *And be it further enacted*, That if need be, any two Justices of the Peace may make out a warrant directed to the Sheriff of the county or his deputy, or Constables of the town or place where any such sick person or persons may be, requiring them or any of them, in the name of the Commonwealth, with the advice and direction of the Selectmen of the same, to remove such infected person or persons, or to impress and take up convenient houses, lodging, nurses, attendance, and other necessaries, for the accommodation, safety and relief of the sick. And such Sheriff, his deputy and Constable, are hereby authorized and required to execute such warrant accordingly.

Sect. 5. *And be it further enacted*, That whenever there shall be brought into any town within this State, either from any other town therein, or from parts without the State, any baggage, clothing, or goods of any kind whatsoever, and it shall be made to appear to the

Selectmen of the town to which such baggage, clothing, or other goods shall be brought, or by the major part of such Selectmen, to the satisfaction of any Justice of the Peace, that there is just cause to suspect baggage, clothing, or other goods to be infected with the plague, small-pox, pestilential fever, or other malignant contagious distemper; it shall be lawful for such Justice of the Peace, and he is hereby required, in such case, by warrant under his hand and seal, directed to the Sheriff or his deputy, or any Constable of the town in which such baggage, clothing, or other goods shall be, requiring him to impress so many men as said Justice shall judge necessary to secure such baggage, clothing, or other goods, and said men to post as a guard and watch over the house or other place or places where such baggage, clothing, or other goods shall be lodged; which Guard and Watch are hereby required to take effectual care to prevent such baggage, clothing, or other goods being removed or intermeddled with by any persons whatsoever until due inquiry be made into the circumstances thereof, requiring likewise the said Sheriff, his deputy, or the Constable aforesaid, if it shall appear necessary, with the advice and direction of said Selectmen, to impress and take up convenient houses or stores, for the receiving, lodging and safe keeping of such baggage, clothing, or other goods, until the same shall be sufficiently cleansed from infection: And in case it shall appear highly probable to the said Justice that such baggage, clothing, or other goods are infected as aforesaid, he is hereby empowered and directed to issue his warrant in manner as aforesaid, requiring said Sheriff, his deputy, or any Constable, or other person therein specially named, to remove said baggage, clothing, or other goods, to some convenient place where there shall be the least danger of the infection spreading; there to remain until the same shall be sufficiently aired and freed from infection, in the opinion of said Selectmen: And the said Sheriff, Deputy-Sheriff or Constable, in the execution of said warrants, are empowered and directed, if need be, to break up any house, warehouse, shop or other place particularly mentioned in said warrant, where such baggage, clothing, or other goods shall be; and in case of opposition, to require such aid as shall be necessary to effect the execution of said warrants and repel such opposition; and all persons are hereby required, at the commandment of either of the said officers, having either of the warrants aforesaid, under penalty of *Ten Dollars*, to be recovered before any Justice of the Peace in the county where such opposition may happen, to assist such officer in the execution of the same warrant against any opposition as aforesaid; and the charges of securing such baggage, clothing, or other goods, and of airing and transporting the same, shall be borne and paid by the owners thereof at such rates and prices as shall be set and appointed by the Selectmen of the town where such baggage, clothing, or other goods shall be, to be recovered by action of debt, by any person or persons who may have been employed in the business aforesaid, in any Court of Record proper to try the same.

Sect. 6. *And be it further enacted*, That inquiry shall be made by the officer or other person on duty at the Castle in the harbor of *Boston*, of every vessel coming from sea, and passing by the said Castle, whether any infectious sickness be on board, or has been on board since such vessel left the port from whence she last came: And if any

such vessel has any sickness on board, or has had any on board since her leaving such port; in such case, orders shall be given by said officer or other person on duty, to the master or commander of such vessel, immediately to anchor and to remain at anchor until a certificate shall be obtained from the major part of the Selectmen of the town of *Boston*, that they are of opinion that such vessel may come up to the town without danger to the inhabitants, or until the said master or commander shall receive orders from the said Selectmen to anchor his vessel near the Hospital on *Rainsford's-Island*, in the harbor of *Boston*. And in case any master or commander of a vessel shall, by himself, or the people on board, make false answer, when inquired of as aforesaid by the officer or other person on duty as aforesaid, or, after orders are given as aforesaid, shall neglect or refuse to anchor near the Castle as aforesaid, or come on shore, or suffer any passenger or other person belonging to the vessel to come on shore, or any goods to be taken out before the vessel shall have anchored, or without liberty from the Selectmen as aforesaid; or in case any master or commander of a vessel ordered to anchor near the Hospital aforesaid shall neglect or refuse so to do; in every such case, every master or commander so offending shall forfeit and pay for each offence the sum of *Four Hundred Dollars*, or suffer six months' imprisonment.

Sect. 7. *And be it further enacted*, That upon application made to the Selectmen of the town of *Boston* by any master or commander of any vessel at anchor near the Hospital as aforesaid, the said Selectmen are hereby empowered to permit such passengers, goods or lading, as they shall judge free from infection, to come on shore; or to be taken out and disposed of as the owners shall see fit; and such passengers and goods as shall not be permitted as aforesaid, shall remain on board, or be landed on said Island. And if any master or commander of any such vessel, for the time being, shall come on shore, or suffer any of his people or passengers to come on shore, or any boat to come on board, or suffer any goods to be taken out of his vessel, unless permitted as aforesaid, or shall come up to said town with his vessel until by a certificate under the hands of said Selectmen, or the major part of them, it shall appear, that said vessel, company and goods are clear of infection, and the orders for stopping the same be removed or taken off, he shall, for every such offence, forfeit the sum of *Two Hundred Dollars;* and in case he be not able to pay that sum, he shall suffer three months' imprisonment. And if any sailors or passengers coming in said vessel shall, without the knowledge or consent of the master or commander, presume to come on shore, or up above the Castle aforesaid; or if any person shall knowingly presume to go on board from shore, or to go to the aforesaid House or Island in time of infection there, without leave as aforesaid; or if any person put sick into the said House, or sent there on suspicion of being infected, shall presume to go off the said Island without leave as aforesaid; any person offending in any of the particulars above mentioned, shall forfeit the sum of *Two Hundred Dollars*; and in case such person be not able to pay said forfeiture, he shall suffer two months' imprisonment: All prosecutions for offences contrary to this and the preceding section, shall be by indictment or information in the Supreme Judicial Court or Court of General Sessions of the Peace;

—and one moiety of all fines mentioned in said sections, shall be to the use of the town of *Boston*—and the other moiety to the use of the Selectmen of said town for the time being, whose particular duty it is hereby made to prosecute therefor.

Sect. 8. *And be it further enacted*, That whenever any ship or vessel, wherein any infection or infectious sickness hath lately been, shall come to any harbor within this State; or whenever any person or persons belonging to, or that may either by sea or land come into any town or place near the public Hospital aforesaid, shall be visited, or shall lately before have been visited with any infectious sickness; two of the Justices of the Peace, or Selectmen of such place, be and hereby are empowered immediately to order the said vessel and sick persons to the said Hospital, there to be taken care of according to the directions of this Act. And where any such ship, vessel or persons cannot, without great inconvenience and damage, be ordered to the aforesaid Hospital; in any such case, the rules and directions are to be observed which are provided in the first enacting clause of this Act. And in case the master or mariners of any vessel ordered to the Hospital as aforesaid, shall refuse or delay for the space of six hours after such order being given to said master, or either of the owners of said vessel, or of the factors, or either of said owners of the goods, to come to sail, if wind and weather permit, in order to proceed to said Hospital; such master so refusing shall forfeit and pay the sum of *Four Hundred Dollars;* and each mariner so refusing, the sum of *One Hundred Dollars;* and in case they be not able to pay said sums, they shall suffer six months' imprisonment,—one half of said fine to be to the informer—and the other half to the poor of the town or district to which such port or harbor belongs; and to be recovered in any Court of Record proper to try the same, by indictment or information.

Sect. 9. *And be it further enacted*, That if any master, seaman or passenger belonging to any vessel, on board which any infection is or may have lately been, or suspected to have been, or which may have come from any port where any infectious, mortal distemper prevails, shall refuse to make answer on oath to such questions as may be asked him or them relating to such infection, by the Selectmen of the town to which such vessel may come (which oath the said Selectmen are hereby empowered to administer) such master, seamen or passenger so refusing, shall forfeit the sum of *Two Hundred Dollars;* and in case he be not able to pay said sum, he shall suffer six months' imprisonment; said penalty to be adjudged on prosecution by indictment on information in any Court proper to try the same,—one moiety of said fine to the use of the town where the offence may be committed—and the other moiety to the use of the Selectmen thereof, whose particular duty it is hereby made to prosecute therefor.

And the Selectmen of *Boston* are hereby authorized and directed to provide nurses, assistance and other necessaries, for the comfort and relief of such sick persons as may be sent to said Hospital as aforesaid: The charge thereof to be borne by the said persons themselves, if able; or if poor and unable, by the towns to which they respectively belong; or if not inhabitants of any particular town or other place within this State, then by the Commonwealth.

Sect. 10. *And be it further enacted*, That whenever the small-pox

or other mortally infectious distemper shall prevail in any of the towns wherein the Supreme Judicial Court of this Commonwealth, the Courts of Common Pleas, or General Sessions of the Peace are to be holden, at the times prescribed by law, or by their own adjournment, for their sitting in such town; the Justices of the said Courts, respectively, are hereby empowered to adjourn and hold said Courts in any town within the same county, by proclamation to be made in the shire town, or as near the same as safety will, in their opinion, permit.

Sect. 11. *Be it further enacted*, That each town or district in this Commonwealth may, at their meeting held in *March* or *April* annually, or at any other meeting legally warned for the purpose, when they shall judge it to be necessary, choose and appoint a Health-Committee, to consist of not less than five, nor more than nine suitable persons, or one person to be a Health-Officer, whose duty it shall be to remove all filth of any kind whatever which shall be found in any of the streets, lanes, wharves, docks, or in any other place whatever within the limits of the town to which such Committee or Health-Officer belongs, whenever such filth shall, in their judgment, endanger the lives or the health of the inhabitants thereof: All the expenses whereof to be paid by the person or persons who placed it there, if known: or if not, by the town by which said Committee or Health-Officer was appointed. And whenever any filth as aforesaid shall be found on private property, said Committee or Health-Officer shall notify and order the owner or occupier thereof, after twenty-four hours' notice, to remove the same, at their own expense; and in case said owner or occupier shall neglect to remove such filth from his or her property, after the expiration of the time aforesaid, he or they so offending shall forfeit and pay a fine of *One Hundred Dollars*, to be sued for and recovered, with costs of suit, by said Committee or Health-Officer, before any Court proper to try the same, for the use of the poor of the town in which such offence is committed: And said owner or occupier as aforesaid shall be liable and obliged to repay to said town all cost and charges which the said Committee or Health-Officer may have incurred in removing the filth from his or her property; and in case of refusal to pay the same, he or they may be sued in the same way as is provided in this Act for the recovery of fines as aforesaid.

Sect. 12. *And be it further enacted*, That whenever any vessel shall arrive at any port other than *Boston* within this Commonwealth, having on board any person visited with the plague, small-pox, malignant fever, or any other pestilential disease, the master, commander or pilot thereof, shall not bring such vessel up near the town of the port where she first arrives, until liberty be first granted, in writing, by the Selectmen thereof; but they may bring such vessel to an anchor, in such place below the town as will be most for the safety of the inhabitants thereof, and the preservation of the vessel and the people on board, there to wait for orders from the Selectmen of such town, before any passenger or person belonging to, or any thing on board the same, be brought on shore: And any master or commander of such vessel who shall be found guilty of a breach of the law contained in this section, shall forfeit and pay a fine of *Two Hundred Dollars* for every such offence, upon conviction thereof before any Court proper to try the same. And any Pilot who may go on board any such vessel

and pilot the same up to the town, without liberty first had and obtained from the Selectmen thereof as aforesaid, shall, upon conviction in manner as aforesaid, forfeit and pay a fine of *Fifty Dollars* for every such offence: All which fines contained in this section may be sued for and recovered, with costs of suit, in manner as aforesaid, by the Selectmen of the town where the offence is committed, to and for the use of the same town.

Sect. 13. *And be it further enacted*, That a law of this Commonwealth, made in the year one thousand seven hundred and one, providing in case of sickness; one other Law made in addition thereto in the year one thousand seven hundred and fifty-one; one other Law made in the year one thousand seven hundred and thirty, empowering Courts to adjourn and remove from the towns appointed by law for holding Courts, to other towns, in case of sickness by the small-pox; one other Law made in the year of our Lord one thousand seven hundred and fifty-seven, for regulating the Hospital on *Rainsford's-Island*, and further providing in case of sickness; one Law passed the next year, in addition thereto; one other Law made in the year one thousand seven hundred and forty-two, to prevent the spreading of the small-pox and other infectious sickness, and to prevent the concealing the same, be and they are hereby repealed, except that the same shall remain in force for the purpose of recovering all fines incurred by force thereof.

III. Revised Statutes, now in force, Chap. 21:—"On the Preservation of Public Health; Quarantine; Nuisances; and Offensive Trades."

[Note.—The following sections have been repealed, and are here omitted:—10, 11 and 46, May 2, 1849; 16, April 20, 1837; 17, 38 and 40, April 20, 1838.]

Sect. 1. Every town, respecting which no provision is made, by any special law, for choosing a board of health, may, at their annual meeting, or at any other meeting legally warned for the purpose, choose a board of health, to consist of not less than three nor more than nine persons; or they may choose one person to be a health officer; and, in case they shall not choose any board of health or health officer, the selectmen shall be the board of health.

Sect. 2. In the city of Boston, the city council shall exercise all the powers, and perform all the duties of a board of health for the said city.

Sect. 3. Every board of health may appoint a physician to the board, who shall hold his office during their pleasure.

Sect. 4. The board of health shall establish the salary or other compensation of such physician, and shall regulate all fees and charges of every person, employed by them in the execution of the health laws and of their own regulations.

Sect. 5. The board of health shall make such regulations respecting nuisances, sources of filth, and causes of sickness, within their respective towns, and on board of any vessels in their harbors, as they shall judge necessary for the public health and safety; and if any person shall violate any such regulation, he shall forfeit a sum not exceeding one hundred dollars.

Sect. 6. The said board shall also make such regulations, as they

may judge necessary for the public health and safety, respecting any articles which are capable of containing or conveying any infection or contagion, or of creating any sickness, when such articles shall be brought into or conveyed from their town, or into or from any vessel; and if any person shall violate any such regulations, he shall forfeit a sum not exceeding one hundred dollars.

SECT. 7. The said board shall also make all regulations, which they may judge necessary for the interment of the dead, and respecting burying grounds in their towns.

SECT. 8. Notice shall be given, by the board of health, of all regulations made by them, by publishing the same in some newspaper of their town, or, where there is no such newspaper, by posting them up in some public place of the town; and such notice of said regulations shall be deemed legal notice to all persons.

SECT. 9. The board of health shall examine into all nuisances, sources of filth, and causes of sickness, that may, in their opinion, be injurious to the health of the inhabitants within their town, or in any vessel within the harbor of such town, and the same shall destroy, remove or prevent, as the case may require.

SECT. 12. When any person shall be convicted, on an indictment for a common nuisance, that may be injurious to the public health, the court may, in their discretion, order it to be removed or destroyed, at the expense of the defendant, under the direction of the board of health of the town, where the nuisance is found; and the form of the warrant to the sheriff, or other officer, may be varied accordingly.

SECT. 13. The court of common pleas, or any one of the justices thereof, in term time or vacation, may, in all cases, either before or pending a prosecution for a common nuisance affecting the public health, issue an injunction to stay or prevent the same, until the matter shall be decided by a jury or otherwise; and may issue all such other writs and processes, and make all such orders and decrees, according to the course of proceedings in chancery, as may be necessary or proper to enforce such injunction; and may dissolve the same, when the court or any one of the said justices shall think it proper.

SECT. 14. Whenever the board of health shall think it necessary, for the preservation of the lives or health of the inhabitants, to enter any land, building or vessel within their town, for the purpose of examining into, and destroying, removing or preventing any nuisance, source of filth, or cause of sickness, and shall be refused such entry, any member of the board may make complaint, under oath, to any justice of the peace of his county, stating the facts of the case, so far as he has knowledge thereof, and such justice may thereupon issue a warrant, directed to the sheriff or either of his deputies, or to any constable of such town, commanding them to take sufficient aid, and, being accompanied by any two or more members of said board of health, between the hours of sunrise and sunset to repair to the place, where such nuisance, source of filth or cause of sickness complained of, may be, and the same to destroy, remove or prevent, under the directions of such members of the board of health.

SECT. 15. The board of health may grant permits for the removal of any nuisance, infected article or sick person, within the limits of their town, when they shall think it safe and proper so to do.

SECT. 18. The board of health of any town near to, or bordering upon, either of the neighboring states, may appoint, by writing under their hands, suitable persons to attend at any places, by which travellers may pass from infected places in other states; and the persons, so appointed, may examine such passengers, as they may suspect of bringing with them any infection, which may be dangerous to the public health, and, if need be, may restrain them from travelling, until licensed thereto by the board of health of the town, to which such person may come; and any passenger, coming from such infected place, who shall, without license as aforesaid, travel within this state, unless it be to return by the most direct way to the state from whence he came, after he shall be cautioned to depart by the persons appointed as aforesaid, shall forfeit a sum not exceeding one hundred dollars.

SECT. 19. Any two justices of the peace may, if need be, make out a warrant, directed to the sheriff of the county, or his deputy, or to any constable, requiring them, under the direction of the board of health, to remove any person, infected with contagious sickness, or to impress and take up convenient houses, lodging, nurses, attendants, and other necessaries, for the accommodation, safety and relief of the sick.

SECT. 20. Whenever, on the application of the board of health, it shall be made to appear to any justice of the peace, that there is just cause to suspect that any baggage, clothing or goods, of any kind, found within the town are infected with the plague or any other disease, which may be dangerous to the public health, such justice of the peace shall, by warrant, directed to the sheriff or his deputy, or to any constable, require him to impress so many men, as said justice shall judge necessary, to secure such baggage, clothing or other goods, and to post said men as a guard over the house or place, where such baggage, clothing or other goods shall be lodged; which guard shall take effectual care to prevent any persons removing or coming near to such baggage, clothing or other goods, until due inquiry be made into the circumstances thereof.

SECT. 21. The said justice may also, by the same warrant, if it shall appear to him necessary, require the said officers, under the direction of said board of health, to impress and take up convenient houses or stores, for the safe keeping of such baggage, clothing or other goods; and the board of health may cause them to be removed to such houses or stores, or to be otherwise detained, until they shall, in the opinion of the said board of health, be freed from infection.

SECT. 22. The said officers, in the execution of such warrant, shall, if need be, break open any house, shop, or other place mentioned in said warrant, where such baggage, clothing, or other goods shall be; and they may require such aid, as shall be necessary to effect the execution of the warrant; and all persons shall, at the command of either of the said officers, under a penalty not exceeding ten dollars, assist in the execution of the warrant.

SECT. 23. The charges of securing such baggage, clothing or other goods, and of transporting and purifying the same, shall be paid by the owners thereof, at such rates and prices as shall be determined by the board of health.

SECT. 24. Whenever the sheriff or other officer shall impress or

take up any houses, stores, lodging, or other necessaries, or shall impress any men, as provided in this chapter, the several parties interested shall be entitled to a just compensation therefor, to be paid by the town, in which such persons or property shall have been so impressed.

SECT. 25. Whenever any person, confined in any common jail, house of correction, or work house, shall be attacked with any disease which, in the opinion of the physician of the board of health, or of such other physician as they may consult, shall be considered dangerous to the safety and health of the other prisoners, or of the inhabitants of the town, the board of health shall, by their order in writing, direct the removal of such person to some hospital, or other place of safety, there to be provided for and securely kept, so as to prevent his escape, until their further order; and if such person shall recover from the disease, he shall be returned to the said prison or other place of confinement.

SECT. 26. If the person so removed shall have been committed by order of any court, or under any judicial process, the order for his removal, or a copy thereof, attested by the presiding member of said board of health, shall be returned by him, with the doings thereon, into the office of the clerk of the court, from which the process was issued for committing such prisoner; and no prisoner, removed as aforesaid, shall be considered as having thereby committed an escape.

QUARANTINE.

SECT. 27. Any town may establish a quarantine ground, in any suitable place, either within or without its own limits; provided, that, if such place shall be without its limits, the assent of the town, within whose limits it may be established, shall be obtained therefor.

SECT. 28. Any two or more towns may, at their joint expense establish a quarantine ground for their common use, in any suitable place, either within or without their own limits; provided, that if such place shall be without their limits, they shall obtain the assent of the town, within whose limits such place may be.

SECT. 29. The board of health in each seaport town may, from time to time, establish the quarantine, to be performed by all vessels arriving within the harbor of such town; and may make such quarantine regulations, as they shall judge necessary for the health and safety of the inhabitants.

SECT. 30. The quarantine regulations, so established, shall extend to all persons, and all goods and effects, arriving in such vessels, and to all persons, who may visit or go on board of the same.

SECT. 31. The quarantine regulations aforesaid, after notice thereof shall have been given, in the manner before provided in this chapter, shall be observed by all persons; and any person who shall violate any such quarantine regulation, shall forfeit a sum not less than five dollars, nor more than five hundred dollars.

SECT. 32. The board of health, in each seaport town, may, at all times, cause any vessel arriving in such port, when such vessel or the cargo thereof shall in their opinion be foul or infected, so as to endanger the public health, to be removed to the quarantine ground, and to be thoroughly purified, at the expense of the owners, consignees, or persons in possession of the same; and they may also cause all per-

sons, arriving in or going on board of such infected vessel, or handling such infected cargo, to be removed to any hospital under the care of said board of health, there to remain under their orders.

SECT. 33. If any master, seaman or passenger, belonging to any vessel, on board of which any infection may then be, or may have lately been, or suspected to have been, or which may have been [*at*], or which may have come from, any port where any infectious distemper prevails, that may endanger the public health, shall refuse to make answer on oath to such questions, as may be asked him, relating to such infection or distemper, by the board of health of the town, to which such vessel may come, (which oath any member of said board may administer,) such master, seaman or passenger so refusing, shall forfeit a sum not exceeding two hundred dollars; and, in case he be not able to pay said sum, he shall suffer six months' imprisonment.

SECT. 34. All expenses, incurred on account of any person, vessel or goods, under any quarantine regulations, shall be paid by such person, or the owner of such vessel or goods, respectively.[1]

[1] All the authority, which is here contained in eight sections relating to quarantine, is provided for in the twenty-first section of the proposed act. We have stated (p. 200) that great changes in public opinion on this subject have taken place in recent years. Since that paragraph was in print a communication from the Consulting Physicians of the city of Boston has been published; and we are pleased to notice the following passages:—

"Quarantine establishments were created at a remote period, when the laws which regulate the diffusion of malignant epidemics were less understood than they now are. A dread of the wide sweeping mortality which these diseases sometimes bring with them, naturally led to the introduction of every practicable measure supposed to be adapted to prevent their dissemination.

The spirit which of late years has been applied to the investigation of facts connected with this subject, has wrought a great change of opinion in the minds of medical men and even of the whole community.

In consequence of very careful researches, some of the formidable diseases, reputed to be contagious, have been ascertained to be scarcely if at all so; such as the yellow fever, cholera, leprosy, &c.; others, whose non-contagious character is not established, have been found to be contagious only in particular localities among persons where an epidemic predisposition existed; such as one of the forms of typhus fever.

The facts, from which the conclusions alluded to, have been derived, are too numerous to be cited here. Furthermore, we might notice that the diseases generally believed to be communicable by contact, such as small-pox, measles, &c., are more frequently introduced into this city by land than by sea; and that, to oppose an effectual barrier to these diseases, we must establish a *cordon* around the city, and wholly cut off communication with the places where they exist. Whether even these means would be effectual we consider to be most doubtful.

Contagious or infectious disease, in order to be propagated, requires the concurrence of two circumstances:—1. A disposition to disease, usually called a predisposition, in the subject. 2. The existence of a contagious or infectious principle.

This principle is supposed to exist in the atmosphere or in some unknown medium, and is either generated in the infected spot, or conveyed to it from a distance through such medium. Now it is pretty obvious that sanitary *cordons* and quarantines can have no efficacy in resisting the transmission of a noxious principle through the atmospheric air, or through an unknown medium.

The statements briefly made above are not founded on vague suspicions and popular opinions; they are derived from the careful and laborious observation of the diffusion of disease and the result of experiments. We believe, therefore, they will authorize the following conclusions:—

1. That the great epidemics against which quarantines and sanitary cordons have been established, the plague, yellow fever and cholera, are not the necessary nor proper subjects for such precautionary regulations.

2. That typhus fever is not commonly contagious out of its proper or epidemic atmosphere.

3. That the diseases generally believed to be contagious, such as the small-pox, measles, &c., are transmitted through the atmosphere from an infectious living body and received, apparently through the lungs, by the infected person.

The considerations stated above are, we conceive, conclusive against 'the necessity or utility of a quarantine establishment as a means of preventing or arresting the progress of contagious or infectious diseases.'

SMALL-POX AND OTHER DANGEROUS DISEASES.

SECT. 35. The inhabitants of any town may establish, within the same town, and be constantly provided with, one or more hospitals for the reception of persons, having the small-pox or other disease, which may be dangerous to the public health.

SECT. 36. All such hospitals shall be subject to the orders and regulations of the board of health, or a committee of such town, appointed for that purpose.

SECT. 37. No such hospital shall be established, within one hundred rods of any inhabited dwelling-house, situated in any adjoining town, without the consent of such adjoining town.

SECT. 41. When any disease dangerous to the public health, other than the small-pox, is found to exist in any town, the selectmen and board of health shall use all possible care to prevent the spreading of the infection, and to give public notice of infected places to travellers, by displaying red flags at proper distances, and by all other means, which in their judgment shall be most effectual for the common safety.

SECT. 42. If any physician or other person, in any of the hospitals or places of reception before mentioned, or who shall attend, approach or be concerned with the same, shall violate any of the regulations lawfully made in relation thereto, either with respect to himself, or his or any other person's property, the person so offending shall, for each offence, forfeit a sum not less than ten nor more than one hundred dollars.

SECT. 43. When any householder shall know that any person within his family is taken sick of the small-pox, or any other disease dangerous to the public health, he shall immediately give notice thereof to the selectmen or board of health of the town in which he dwells; and if he shall refuse or neglect to give such notice, he shall forfeit a sum not exceeding one hundred dollars.

SECT. 44. When any physician shall know that any person, whom he is called to visit, is infected with the small-pox, or any other disease dangerous to the public health, such physician shall immediately give notice thereof to the selectmen, or board of health of the town in which the diseased person may be; and every physician, who shall refuse or neglect to give such notice, shall forfeit for each offence a sum not less than fifty nor more than one hundred dollars.

INOCULATION WITH THE COW-POX.

SECT. 45. Each town may, at any meeting, make suitable provision for the inoculation of the inhabitants with the cow-pox, under

The total abolition of the present system of quarantine regulations seems to us therefore to be imperiously demanded by the public good.

At the same time we would ask leave to state as our opinion, that it would be necessary to have proper hospitals, or separate accommodations of some sort, for the reception of the poor affected with the small-pox and imported typhus fever, and a city physician to attend these hospitals, to vaccinate the poor, and to keep a watchful eye on such sources of impurity in the atmosphere as are continually arising in a large city."

And they recommend,—"That every vessel which shall hereafter arrive in the harbor of Boston, having emigrant passengers on board, shall be taken to the quarantine ground near Deer Island; and it shall be the duty of the resident physician forthwith to examine the same, and to order any emigrant passengers who may be sick with malignant contagious disease, together with their effects, to be removed before said vessel shall be permitted to leave the said quarantine ground."—*See City Documents: No.* 16 *for* 1841, *and No.* 27 *for* 1850.

the direction of the board of health of each town or of a committee chosen for that purpose; and they shall raise all necessary sums of money, to defray the expenses of such inoculation, in the same manner as other town charges are paid.

OFFENSIVE TRADES.

SECT. 47. The selectmen of every town, and the mayor and aldermen of the city of Boston, respectively, when they shall judge it necessary, shall, from time to time, assign certain places for the exercising of any trade or employment, offensive to the inhabitants, or dangerous to the public health; and they shall forbid the exercise of either of them in places not so assigned; and all such assignments shall be entered in the records of the town or city; and they may be revoked, when the town or city officers shall think proper.

SECT. 48. When any place or building so assigned shall become a nuisance, by reason of offensive smells or exhalations proceeding from the same, or shall become otherwise hurtful or dangerous to the neighborhood or to travellers, and the same shall be made to appear, on a trial before the court of common pleas for the county, upon a complaint made by the board of health or by any other person, the said court may revoke such assignment, and prohibit the further use of such place or building, for the exercise of either of the aforesaid trades or employments, and may cause such nuisances to be removed or prevented.

SECT. 49. Any person, injured either in his comfort or the enjoyment of his estate, by any such nuisance, may have an action on the case, for the damage sustained thereby; in which action, the defendant may plead the general issue and give any special matter in evidence.

DANGEROUS DISEASES.

[*See Acts*, 1837, *ch.* 244; *and* 1848, *ch.* 119.]

SECT. 1. Whenever any person, coming from abroad, or residing in any town in this State, shall be infected, or shall lately before have been infected, with the plague, or other sickness dangerous to the public health, the board of health of said town shall make effectual provision in the manner which they shall judge best for the safety of the inhabitants, by removing such sick or infected person to a separate house or otherwise, and by providing nurses and other assistance and necessaries; which shall all be at the charge of the person himself, his parents or master, if able, otherwise, at the charge of the town to which he belongs; and in case such person is not an inhabitant of any town in this State, then at the charge of the Commonwealth.

SECT. 2. When any disease dangerous to the public health, other than the small-pox, shall break out in any town, the board of health thereof shall immediately provide such hospital or place of reception for the sick and infected as they shall judge best for their accommodation, and the safety of the inhabitants; and such hospitals and places of reception shall be subject to the regulations of the said board of health, in the same manner as is provided in the case of established hospitals, by the twenty-first chapter of the Revised Statutes; and the said board of health may cause such sick and infected persons to be removed to such hospitals or places of reception, unless the condition of the sick or infected person be such as not to admit of his removal without danger to his health, in which case the house or place where

such person shall remain, shall be considered as a hospital to every purpose aforesaid; and all persons residing in, or in any way concerned with the same, shall be subject to the regulations of said board of health, as before provided.

The provisions of the Act relating to Public Health, of May 2, 1849, are incorporated into the 30—34 sections of the proposed act, and adapted to towns as well as cities. Some acts, passed in 1850, are noticed in this Report, pp. 138, 149, 165 and 178.

IV. Extracts from the By-Laws and Ordinances of the Town of Boston, in force prior to the Year 1800.

When any drain shall be opened or laid, and the dirt or rubbish therefrom shall be laid in any street, lane, alley, or other public highway or place in this town, the person or persons opening or laying the same, shall cause a rail or other sufficient fence to be so fixed as to inclose such drain, and the dirt and rubbish thrown into the street as aforesaid; and such fence shall be continued during the whole time such drain shall be open or be laying or cleansing. And a lighted lantern or other good light shall be fixed to some part of such fence, or to a pole, or some other proper elevation over such open drain, and the dirt accruing therefrom, from the dusk in the evening, and shall be continued lighted until midnight, every evening or night during the whole time such drain shall lay open, or be laying or repairing; under the penalty that the person or persons, at whose cost, or by whose direction, the same shall be opened, laid or repaired, shall forfeit and pay the sum of four dollars for any and every neglect herein.

No person shall hereafter carry, cart or throw, or cause to be carried, carted or thrown, into any of the streets, lanes, alleys or other public places in this town, any dust, dirt, dung, soot, garbage, carrion, shreds, shavings, filth, soil, oyster shells or rubbish (other than in manner directed from time to time by the selectmen, or the board of health) or any offals, or any kind of thing made and accumulated, or being in any of their respective houses, out-houses, barns, stables, shops or yards, or in any of the dependencies thereof, or appurtenances thereto, any or either of them, upon pain of forfeiting and paying for every offence the sum of one dollar. And in case any person or persons so offending, shall refuse or neglect to remove such matter or thing before enumerated, in twelve hours after notice given to him, her or them so to remove the same, the said person or persons shall be subject to a new penalty of two dollars for every such offence.

No person shall lay, cart or spread any dead carcass, ordure, filth, stones or rubbish upon any part of the Common, or common lands of this town, unless it be the dust and dirt of the town collected by the scavengers, or by those whom the selectmen or board of health may or shall contract with for collecting the dust and dirt from the houses, yards and public streets, lanes and alleys of the town, under the penalty of three dollars for every offence herein.

No person shall fire or discharge any gun or pistol from any top of any house, or in any of the streets, wharves, lanes, alleys, yards, pas-

tures, gardens or other inclosures, or from the commons or hills in any part of this town, loaded with ball or shot, or powder only, unless in the just and legal defence of himself, some one or more of his family, or of his or her goods or property, unlawfully attacked, or attempted to be injured, taken away or destroyed, under pain of forfeiting and paying the sum of two dollars for every offence.

No person whatsoever driving any carriage or riding upon any horse, mare or gelding, in or through the said streets, &c., shall suffer the beast or beasts he shall so drive or ride to go in a gallop so as to endanger persons standing or walking in the streets, lanes or alleys.

And all carters and other persons having the care of any wagon, cart, truck, sled or drag, passing through or in the streets of said town, shall drive their beast or beasts at a moderate foot pace, and shall not suffer them to go in a gallop or trot; and if any such driver shall not hold reins in his hands to guide and restrain his beasts as in manner aforesaid, he shall walk by the head of the shaft or wheel horse, holding, or within reach of the bridle or halter of the said horse, in order to guide and restrain them in manner aforesaid; and every person wilfully or negligently offending in any or either of the cases aforesaid, shall forfeit and pay, for every such offence, a sum not less than two dollars nor more than five dollars.

And no coach, chariot, sleigh, chaise, sled or other carriage belonging to any inhabitant of this town, shall go or be driven through any part of the town, during any time or times that the snow shall be upon or cover the streets, without carrying or having some bell or bells fastened to the horse or horses drawing the same, or to some part of such carriage; that due and timely notice may be given to the inhabitants, of such carriage coming on, under the penalty of two dollars for every offence.

No person or persons shall hereafter erect or set up, or cause to be erected or set up, any necessary, or privy, in this town (or suffer any such to continue, being already erected, set up or standing) within forty feet of any street, lane, alley or other highway in this town, or within the like distance of the dwelling house, shop, or well of any of his, her or their neighbor or neighbors, unless the same be vaulted six feet deep, and sufficiently inclosed or otherwise well secured, under the penalty that the owner or landlord of every tenement to which the same shall belong, shall forfeit and pay the sum of three dollars, and also the sum of five dollars for every month the same shall continue and so remain.

And no vault of a necessary or privy shall be dug so as to communicate with any common sewer, or with any drain leading to a common sewer, unless the said common sewer shall have been built for the express purpose of receiving the filth from such vaults, and shall not be connected with the cellar of any house. And no vault of a necessary or privy shall hereafter be dug within two feet of the line of any lot, under the penalty that the person or persons offending against either of the above restrictions, shall forfeit and pay five dollars, and also five dollars for every month the same shall continue or remain.

V. Rules and Regulations of the First Board of Health of the Town of Boston, adopted in the Year 1799.—[*See this Report, pp.* 52 *and* 53.]

1. No hogsties or hogs shall be kept within the town without a license from the Board of Health, and except they stand over the water in such manner that the filth will be completely carried off by the ebbing and flowing of the tide.

2. No person shall be permitted to bring, sell or have in his possession within the town, any oysters, from and after the first day of June until the first day of September following, in each year.

3. No fresh fish shall be sold or kept in any stall, fish-box, or other house within the town, except such stall, fish-box or other house stands over the salt water.

4. No fresh fish shall be brought between the channel and the shore, or within the town, unless their throats have been cut, the blood cleanly washed off, and the gills and entrails taken out and thrown away—salmon, eels, live and small fish excepted ; nor shall any fresh fish remain on board any vessel, stall, fish-box or other place for a longer space than twelve hours without being salted.

5. No person shall be allowed to sell any salmon, eels, or small fish within the town, without having a tight vessel, sufficiently large to hold the skins, heads and other offals of the said fish, and they shall put the same therein as collected and made, and after cause them to be thrown either into the channel, or otherwise carried out of town, before they become putrid or offensive.

6. No seller of fish shall scale any fish on the land within the limits of the town, or throw the heads of fish on any wharf or into the streets, lanes or alleys of the same.

7. All persons having stalls in Faneuil Hall Market House, the Market or Dock square, shall be obliged once in every day to wash and cleanse their respective stalls ; and from and after the first day of July and until the first day of October next following, in each year, no heads or offals of dead creatures or vegetables of any kind shall be suffered to remain over night in either of the above places.

8. No feather or other beds, bedding or clothing, arriving from any place where a contagious disorder prevails, or hath lately prevailed, shall be landed within the town from any vessel, boat or craft, (though said vessel, boat or craft, may not have been directed to perform quarantine,) without permission in writing from the Board of Health.

9. No owner or keeper of a livery or other stable within the town, shall have more than two cart loads of dung at one time, proceeding from his said stable, from the first day of May until the first day of November then next following, in each year.

10. All graves for the interment of the dead shall be at least six feet deep, and the proprietors of the several churches within the town under which dead bodies are or may be deposited, shall cause at least three bushels of lime to be slacked under each of them once every fourteen days, from the first day of June until the first day of October next following in each year.

11. No person shall throw any dead animals or vegetable substances or the sweepings of vessels' holes into any of the docks, Mill pond,

bottom of the Common, or harbor within the channel and the shore, or land the same on any of the wharves within the town.

12. No person shall open or clean any vaults of privies within the town, without permission in writing from the Board of Health, from and after the first day of May, until the first day of November the next following in each year, but whenever and as often as the contents of any privy is within eighteen inches of the surface of the earth, they shall directly apply to the board for a license to empty the same, under such restrictions and regulations as they may direct, and empty the same accordingly.

13. No waste water shall be suffered to run upon the surface of the streets from any house, building, or yard abutting on a street in which there is a common sewer, but the same shall be led therein by the owners of the buildings.

14. Neither the proprietors of the Mill pond, their agents, tenants, any person employed by or under them, or any other person whomsoever, shall at any time after the fifteenth day of June, and until the first of October next following, in any year, draw off the waters of the said pond, in such manner as to cause the surface on the shoalest part to be dry, without a license therefor from the Board of Health.

15. No feathers shall be landed within the limits of the town of Boston, before the same have been examined by some person authorized for that purpose by the Board of Health, and a certificate obtained from him, that in his opinion the said feathers are free from infection, and may be landed without danger to the health of the inhabitants of the town; nor shall any hawkers or dealers in feathers expose for sale in the streets any feathers before the same have been in like manner examined, and a similar certificate obtained.

16. No person shall throw into any street, lane or alley, within the town, any dirt, filth, animal substances or sweepings of any kind, except on the days the scavengers of the wards pass through with their carts, when they shall bring the same, together with the sweepings and filth necessarily made in their yards, into the streets, before the hours of 9 o'clock, A. M., for the purpose of being carried away by the scavenger; and any of the inhabitants refusing or neglecting to collect and bring out their dirt, for the purpose as aforesaid, will be considered as violating the rules and regulations of the Board of Health; and in case any scavenger neglects to carry away said sweepings and filth, it is required of the inhabitants to whom such neglect is made, to enter on the same day a complaint against such scavenger, to the Board of Health.

VI. Ordinance of the City of Boston relating to Public Health, passed August 20, 1850. [*See this Report, pp.* 117–120.]

Sect. 1. The mayor and aldermen shall constitute the Board of Health of the city, for all purposes, and shall exercise all the powers vested in, and shall perform all the duties prescribed to, the city council as a Board of Health; subject only to any limitations and restrictions contained in the ordinances, regulations and orders of the city council.

Sect. 2. The execution of the laws and ordinances relating to the

subject of internal health, shall be under the superintendence of the city marshal and his deputies; and it shall be their duty, and they and each of them shall have power, to enforce all laws, ordinances, regulations and orders, relating to causes of sickness, nuisances and sources of filth, existing within the city, except as is otherwise provided in this ordinance; subject always to the direction, authority and control of the mayor and aldermen.

Sect. 3. In the month of May or June, annually, there shall be appointed, by concurrent vote of the city council, five consulting physicians, whose duty it shall be, in case of an alarm of any contagious or other dangerous disease, occurring in the city or neighborhood, to give to the mayor or either board of the city council all such professional advice and information as they may request, with a view to the prevention of such disease, and, at all convenient times when requested, to aid and assist them with their counsel and advice in all matters that relate to the preservation of the health of the inhabitants.

Sect. 4. The owner, agent, occupant, or other person having the care of any tenement used as a dwelling-house, or of any other building with which there is a privy connected and used, shall furnish the same with a sufficient drain under ground to carry off the waste water, and also with a suitable privy, the vault of which shall be sunk under ground and built in the manner hereinafter prescribed, and of a capacity proportionate to the number of inhabitants of such tenement, or of those having occasion to use such privy. Any such owner, agent, occupant or other person, who shall neglect to comply with the provisions of this section, shall be liable to a penalty for each and every week during which such offence shall continue.

Sect. 5. All vaults or privies shall be so constructed that the inside of the same shall be at least two feet distant from the line of every adjoining lot, unless the owner of said adjoining lot shall otherwise agree and consent; and also from every street, lane, alley, court, square, or public place, or public or private passage way. Every vault shall be made tight, so that the contents thereof cannot escape therefrom, except as is provided in the following section.

Sect. 6. The superintendent of sewers, under the direction of the mayor and aldermen, is authorized to permit, under such restrictions, and on the payment of such sum, not exceeding twenty dollars, as they shall deem expedient, the construction of sufficient passage ways or conduits under ground, for the purpose of conveying the contents of any of the vaults aforesaid into any common sewer or drain.

Sect. 7. If the mayor and aldermen shall at any time be satisfied that any tenement, used as a dwelling-house, or any such other building as is mentioned in the fourth section, is not provided with a suitable privy, and vault and drain, or either of them as aforesaid, they may give notice in writing to the owner, agent, occupant, or other person having the care thereof, or, in case neither the owner, agent, or person having the care thereof, is an inhabitant of the city, public notice in two newspapers printed in Boston, requiring such owner, agent, occupant or other person, within such time as they shall appoint, to cause a proper and sufficient privy and vault and drain, or either of them, to be constructed for such tenement or other building; and in case of neglect or refusal to obey such notice, the mayor and

aldermen shall have power to cause such privy and vault and drain to be made for such tenement or other building, the expense of which shall be paid by such owner, agent, occupant or other person; and in case any such drain, vault, or privy, is constructed as aforesaid for the use of more than one house, then the owner, agent, occupant, or other person having the charge of each of such houses, shall be liable to pay a proportional part of such expense.

SECT. 8. Whenever any vault, privy or drain, shall become offensive or obstructed, the same shall be cleansed and made free; and the owner, agent, occupant, or other person having charge of the land, in which any vault or privy or drain may be situated, the state and condition of which shall be in violation of the provisions of this ordinance, shall remove, cleanse, alter, amend, or repair the same, within a reasonable time after notice in writing to that effect, given by the mayor, any alderman, or the city marshal. In case of neglect or refusal, for the space of five days, the mayor and aldermen shall cause the same to be removed, cleansed, altered, amended or repaired, as they may deem expedient, at the expense of the owner, agent, occupant, or other person as aforesaid, and such owner, agent, occupant or other person, shall also be liable to a penalty.

SECT. 9. No vault or privy shall be emptied, without a permit from the city marshal, or his deputy; nor in any other mode, or at any other time, than he shall direct and appoint; conformable to such regulations and contracts as the mayor and aldermen, from time to time, shall make on the subject, and always at the expense of the owner, agent, occupant, or other person having charge of the tenement in which such vault is situated.

SECT. 10. A book shall be kept in the office of the city marshal, in which shall be entered all applications for opening and cleansing vaults; and the same shall receive attention in the several wards in the order in which they are made. The mayor and aldermen shall, from time to time, determine the sum to be paid by persons who shall make such applications between the fifteenth day of September and the first day of March; and all persons making such application between the first day of March and the first day of June, shall be charged and shall pay double the amount so determined; and all persons making such application between the first day of June and the fifteenth day of September, shall be charged and shall pay at least three times the amount so determined.

SECT. 11. No vault shall be opened between the first day of June and the fifteenth day of September, in each year; unless, on inspection caused to be made, the city marshal or his deputy shall be satisfied of the necessity of the same, for the health or comfort of the inhabitants. In such case, no more of the contents shall be taken away, than they or either of them shall deem to be absolutely necessary for present safety and relief, and such precautions shall be used relative to the preventing of any offensive effluvia, as they, or either of them shall direct, at the expense of the owner, agent, occupant, or other person having charge of the premises.

SECT. 12. All waste water shall be conveyed through sufficient drains under ground, to a common sewer, or to such reservoir, sunk under ground, as shall be approved by the superintendent of sewers.

And no person shall suffer any waste or stagnant water to remain in any cellar or upon any lot or vacant ground by him owned or occupied.

Sect. 13. Whenever, upon due examination, it shall appear to the mayor and aldermen, that the number of persons occupying any tenement or building in the city is so great as to be the cause of nuisance and sickness, and the source of filth; or that any tenements or buildings are not furnished with vaults constructed according to the provisions of this ordinance, and sufficient privies, and drains under ground, for waste water, they may thereupon issue their notice, in writing, to such persons or any of them, requiring them to remove from and quit such tenement or building within such time as the mayor and aldermen shall deem reasonable. And if the person or persons so notified, or any of them, shall neglect or refuse to remove from and quit such tenement or building within the time mentioned in such notice, the mayor and aldermen are hereby authorized and empowered thereupon forcibly to remove them; and such person or persons shall further be liable to a penalty for such neglect or refusal.

Sect. 14. All house offal, whether consisting of animal or vegetable substance, shall be deposited in convenient vessels, and kept in some convenient place, to be taken away by the city scavengers, which shall be done not less than twice in each week.

Sect. 15. No person shall remove or carry, in, along, or through, any of the streets, squares, courts, lanes, avenues, places, or alleys, of the city of Boston, any house dirt, or house offal, or any refuse substances, either animal or vegetable, from any of the dwelling-houses or other places in the city, unless such person so removing or carrying the same, and the mode in which the same shall be removed or carried, shall have been expressly licensed by the mayor and aldermen, upon such terms and conditions as they shall deem the health and interest of the city require.

Sect. 16. No person, without the license of the mayor and aldermen, shall throw into, or leave in or upon, any street, court, square, lane, alley, wharf, public square, public enclosure, vacant lot, or any pond or body of water within the limits of the city, any dead animal, dirt, sawdust, soot, ashes, cinders, shavings, hair, shreds, manure, oyster, clam or lobster shells, waste water, rubbish or filth of any kind, or any refuse animal or vegetable matter whatsoever. Nor shall any person throw into, or leave in or upon any dock, flats or tide water within the jurisdiction of the city, any dead animal or other foul or offensive matter, except as provided in the nineteenth section of this ordinance.

Sect. 17. If any of the substances, in the preceding section mentioned, shall be thrown or carried from any house, warehouse, shop, cellar, yard, or other place, or left in any of the places specified in the preceding section, the owner of such house, warehouse, shop, cellar, yard, or other place, as aforesaid, as well as the occupant thereof, and the person who actually threw, carried or left the same, or who caused the same to be thrown, carried or left, shall severally be held liable for such violation of this ordinance; and all such substances shall be removed from the place where they have been so thrown or left as aforesaid, by such owner or occupant, within two hours after

personal notice in writing to that effect, given by the mayor, any alderman, or the city marshal; or such removal shall be made under the direction of either of the officers just named, and the expense thereof borne by such owner or occupant.

Sect. 18. All dirt, saw-dust, soot, ashes, cinders, shavings, hair, shreds, manure, oyster, clam or lobster shells, waste water, or any animal or vegetable substance, rubbish or filth of any kind, in any house, warehouse, cellar, yard, unaccepted street, or other place, which the mayor and aldermen shall deem injurious to the health of the city, shall be removed by the owner, or occupant, of such house, warehouse, cellar, yard, unaccepted street, or other place, where the same shall be found, within twenty-four hours, or such other time as the mayor and aldermen shall deem reasonable, after notice in writing to that effect, served personally upon the owner, or occupant, or their authorized agent, by any person competent to serve a notice in a civil suit, or left at the owner, occupant or agent's last and usual place of abode, if the same be known and be within the State; or such removal shall be made under the direction of the mayor and aldermen, and the expense thereof borne by such owner or occupant, and in addition, they or either of them shall be liable to a penalty.

Sect. 19. No person shall bring into the city for sale, nor shall sell, nor offer for sale, any halibut, cod, haddock, or mackerel, until the same shall have been cleansed of their entrails and refuse parts; and such entrails and refuse parts shall be thrown overboard, below low water mark; and shall never be kept beyond the flowing of the tide next after such fish are so cleansed; and until so thrown overboard, they shall be kept, in a safe manner, on board the vessels or boats in which the fish were brought. And no person shall sell and deliver, from any stall, fish-box, cart, or other place, any fish of any kind, except flounders, smelts, and other small fish, salmon and shad, until the same shall have been cleansed of their entrails and refuse parts; and such entrails and refuse parts shall be kept in some tight vessel until the same shall be thrown into the sea below low water mark, which shall be done within twenty-four hours after the fish shall have been so cleansed. And no person shall sell, or offer for sale in the city, fish of any kind, unless the same be kept in covered stalls, fish-boxes or other houses, which shall always be clean and in good order, or in clean covered carts or boxes, well secured from the rays of the sun.

Sect. 20. No person shall sell, or offer for sale, in the street, any fish, lobsters, oysters, or shell-fish of any kind, in Market square, Merchants row, South Market street, North Market street, or the street running from Long wharf to Clinton street, or in that part of Washington street between Hayward place and Kneeland street, those parts of Kneeland, Beach and Essex streets, between Front and Washington streets, nor in those parts of Boylston and Eliot streets between Tremont and Washington streets, except by permission of the mayor and aldermen, and on such conditions as they shall order.

Sect. 21. No person shall bring into the city, or have in his possession for sale, or shall sell or offer for sale within the city, any vegetables whatever, (excepting green peas in the pods, and green corn in the inner husks,) which have not previously been divested of such parts or appendages as are not commonly used for food; and no per-

son shall have such parts or appendages in his possession, in any public or private market, or in any store, shop or other place, or in any cart or vehicle in said city, used or occupied for the sale of vegetables or other articles of food.

SECT. 22. No swine or goats shall be kept within the limits of the city, without the license of the mayor and aldermen, and only in such place and manner as they shall direct.

SECT. 23. The owners and occupants of livery and other stables within the city, shall not wash or clean their carriages or horses, or cause them to be washed or cleaned, in the streets or public ways, nor otherwise encumber the same; they shall keep their stables and stable-yards clean, and shall not permit more than two cart loads of manure to accumulate and remain in or near the same, at any one time between the first day of May and the first day of November; nor shall they, within that period, remove any manure, nor cause or suffer the same to be removed, except between the hour of twelve at night and two hours after sunrise.

SECT. 24. No person shall land on any wharf or other place, or shall otherwise bring into the city, any decayed or damaged grain, rice, coffee, fruit, potatoes, or other vegetable product, without a permit therefor from the mayor and aldermen, and in such manner as they shall direct.

CITY PHYSICIAN.

SECT. 25. There shall be chosen annually in the month of May, and whenever a vacancy occurs, by concurrent vote of the two branches of the city council, a city physician, who shall hold his office until a successor is appointed or he is removed. He shall be removable at the pleasure of the city council, and shall receive such compensation as the said council may, from time to time, determine.

SECT. 26. The said physician shall examine into all nuisances, sources of filth and causes of sickness, which may be on board of any vessel at any wharf within the harbor of Boston, or which may have been landed from any vessel on any wharf, or other place, when notified of the same; and, under the direction of the mayor and aldermen, shall cause the same to be removed or destroyed.

SECT. 27. There shall be provided by the city council a suitable apartment for the city physician, free of expense to him; at which place he shall attend, at such times as the mayor and aldermen may direct; and he shall vaccinate, without charge, any inhabitant of Boston, not previously vaccinated, who may apply for that purpose; he shall also give certificates of vaccination to such children as have been vaccinated and shall require such certificates for admission to the public schools: *provided*, that no person shall be entitled to the benefits of this section, who shall wilfully neglect or refuse to return to the office of the city physician, when requested by him, for the purpose of enabling him to ascertain the effect of the vaccination, or to renew the necessary supply of virus for the use of said office.

SECT. 28. The said city physician shall always have on hand, as far as is practicable, a sufficient quantity of vaccine virus, and he shall supply the physicians of the city institutions, and the dispensary, with the same, without expense to them.

SECT. 29. The said city physician shall attend upon all cases of

disease in the jail of the county of Suffolk, and shall perform all the professional services required at said jail.

Sect. 30. The said city physician shall examine all cases of disease within the city, and inquire into all sources of danger to the public health, whenever he shall be called upon by the board of mayor and aldermen, or the overseers of the poor, and shall give his professional services and advice therein without charge.

Sect. 31. The city physician shall keep a record of all cases of small-pox, or other malignant diseases, attended by him under this ordinance, and shall make such reports thereof to the mayor and aldermen, as they may, from time to time, direct.

Sect. 32. The said city physician shall also keep a correct record of all the doings of his office, and shall make a regular return thereof to the city council, as often as once in three months.

Sect. 33. Whenever any vessel shall arrive in the harbor of Boston, between the first day of April and the fifteenth day of November in any year, having on board any hides, hide cuttings, skins, rags, or fruit, it shall be the duty of the harbor master to give immediate notice thereof to the city physician.

Sect. 34. It shall be the duty of every master and consignee of any vessel, arriving within the time fixed in the preceding section, and containing the articles therein named, or any of them, to give immediate notice of the arrival of such vessel to the harbor master or the city physician.

PORT PHYSICIAN.

Sect. 35. There shall be chosen annually in the month of May, and whenever a vacancy occurs, by concurrent vote of the two branches of the city council, a port physician, who shall hold his office until a successor is appointed or he is removed. He shall be removable at the pleasure of the city council, and shall receive such compensation as the said council may, from time to time, determine.

Sect. 36. The said port physician shall reside at Deer Island, which is hereby made and declared to be the place of quarantine for the port of Boston. He shall be superintendent of the quarantine hospital, and physician to all the city establishments which are or may be located upon said island, and which shall not be otherwise provided for. He shall also perform all such services as may be required of him by the city council or the mayor and aldermen in relation to quarantine.

Sect. 37. The said port physician shall keep a record of all cases of small-pox, or other malignant diseases, attended by him under this ordinance, and shall make such reports thereof to the mayor and aldermen, as they may, from time to time, direct.

Sect. 38. The said port physician shall also keep a correct record of his other doings, and shall make a regular return thereof to the city council, as often as once in three months.

INTERMENT OF THE DEAD.

Sect. 39. The department relative to the interment of the dead is placed under the superintendence of the city registrar,[1] whose duty it

[1] The following ordinance, providing for the appointment of a City Registrar, forms a most important part of the health laws of the city, though not herein incorporated :—

Sect. 1. There shall be chosen in the month of February or March, in each year, and

shall be, and he shall have power, to carry into execution all laws, ordinances, regulations and orders relating to the interment of the dead, subject always to the direction, authority and control of the mayor and aldermen.

SECT. 40. The said registrar shall have the care and custody of all the burying-grounds in the city, and it shall be his duty to keep the same in good repair, and secured from trespassers, and to prevent any and all nuisances therein.

SECT. 41. The said registrar is authorized to give licenses for burials, and the removal of dead bodies from the city, and to point out the place, depth, width and range of all graves to be dug in the several burying-grounds, and to declare the limits in such grounds, within which no grave shall be dug, which in his judgment would be dangerous to the public health.

SECT. 42. No person shall bury or inter, or cause to be buried or interred, any dead body, without having first obtained a license so to do from the city registrar, nor in violation of any direction or order of the said registrar, given in accordance with the preceding section.

SECT. 43. No person shall inter, or cause to be interred, any dead body in a grave which shall be less than three feet deep from the surface of the ground surrounding the grave to the top of the coffin.

SECT. 44. The said registrar shall provide all funeral cars used in the city, and shall have the care and custody of the same. He shall cause them to be kept clean and in good repair, and shall permit no person to use the same except funeral undertakers, appointed by the mayor and aldermen, as provided in the following section.

SECT. 45. In the month of January, annually, the mayor and aldermen shall appoint, for a period of one year, such a number of funeral undertakers as they may deem expedient, who shall be responsible for the decent, orderly and faithful management of the funerals undertaken by them, and for a strict compliance with the ordinances of the city in this behalf. Each undertaker may employ porters, of a discreet and sober character, to assist him, and shall be accountable

whenever a vacancy occurs, by concurrent vote of the two branches of the city council, a city registrar, who shall hold his office until a successor is appointed, or he is removed, and who shall be removable at the pleasure of the city council.

SECT. 2. The said city registrar shall perform the duties required by law to be performed by town and city clerks, or town and city registrars, in relation to births, marriages and deaths; and he shall have the custody of all records, books and papers, belonging to the city, relating to these matters.

SECT. 3. The said city registrar shall, in the month of January, annually, report to the city council a statement of the number of births, of intentions of marriage entered according to law, of marriages solemnized, and of deaths recorded, during the previous year, with such other information, and suggestions in relation thereto, as he may deem useful; and he shall perform such other duties as may be required of him by the mayor and aldermen or the city council.

SECT. 4. The said city registrar is authorized to employ one or more assistants, to act under his authority and direction, in obtaining information concerning all matters which may legally come under his superintendence.

SECT. 5. The said city registrar shall receive, in full compensation for all his services, under the general laws and the ordinances of the city, such salary, and such additional allowance for necessary clerk hire and assistants, as the city council may, from time to time, determine.

SECT. 6. The compensation required by law to be paid for obtaining and returning to the city registrar the information required concerning persons deceased, shall be understood as included in the fees, provided to be paid to undertakers, in the fifty-first section of an ordinance relating to public health, in the year eighteen hundred and fifty; and this section shall be considered as part of the agreement in accepting office.

for their conduct; and said undertakers and porters shall always be removable at the pleasure of the mayor and aldermen. No person not appointed as aforesaid, shall undertake the management of any funeral.

SECT. 46. No person shall bury or inter, or cause to be buried or interred, any dead body at any other time of the day than between sun-rising and sun-setting, except when otherwise ordered by the city registrar. No bell shall be tolled in the city of Boston, at any funeral, without a special permit therefor from the mayor. The corpse of every person of ten years of age and upward, shall be conveyed to the grave or tomb in a funeral car, to be drawn by not more than two horses: *provided*, *however*, that, on extraordinary occasions, permission may be obtained from the mayor and aldermen, on application for that purpose, to dispense with any of the provisions of this section.

SECT. 47. No graves shall be opened or dug in any of the burying-grounds in the city, excepting at East Boston and South Boston, unless by permission of the mayor and aldermen, or the city registrar.

SECT. 48. No person shall remove, or cause to be removed from the city, any dead body, for interment, without having first obtained the license of the city registrar.

SECT. 49. No person shall remove any dead body, or the remains of any such body, from any of the graves or tombs in this city, or shall disturb, break up or remove any dead body in any tomb or grave, without the license of the city registrar.

SECT. 50. No grave or tomb shall be opened, from the first day of June to the first day of October, except for the purpose of interring the dead, without the special permission of the mayor and aldermen, or the city registrar.

SECT. 51. The following fees shall be paid for services in the execution of this ordinance, to wit: to the city, fifty cents for every child under the age of ten years, and one dollar for every person of the age of ten years or upwards, buried, and twenty-five cents per mile for any distance that a funeral car may be sent out of the city, which, together with the fees for graves and tombs, are to be collected by the undertaker in each and every case, from the families of the persons interred. The undertakers shall be entitled to receive the following fees, and no more, namely:—for digging a grave eight feet deep, and covering the same, two dollars and fifty cents; for digging a grave six feet six inches deep, one dollar and fifty cents; for digging a grave five feet deep, one dollar and twenty-five cents; and for one four feet deep, one dollar. For opening and closing a tomb, seventy-five cents. For attendance and service at the house of a person deceased, in collecting and returning chairs, and other service, one dollar. For every family notified by request, five cents. For tolling a bell by special permission, fifty cents. For placing a corpse in a coffin, when requested, and removing the same down stairs, one dollar. For the use of one horse in the car, and leader, one dollar and fifty cents; and for each additional horse, seventy-five cents; and twenty-five cents each mile in addition for every horse attached to the car, when the same is sent out of the city. For carrying a corpse from the house to the car, and from the car to the grave, tomb or vault, and placing the same therein, and closing the same, including the assist-

ance of the funeral porters, three dollars; and the same fees shall be allowed and paid in all cases of removing a corpse from any public vault, and reburying or entombing the same, as are allowed and paid for buring or entombing a corpse in any grave, vault or tomb, as aforesaid. For the burial of children, under ten years of age, to wit: for digging a grave three and a half feet deep, seventy-five cents; for service at the house, one dollar; for tolling a bell by special permission, fifty cents; for carrying the corpse to the carriage, and from the carriage to the place of deposit, one dollar; and for the use of a pall, twenty-five cents. And when a corpse shall be carried into a church for a funeral service, the undertaker may make an additional charge of two dollars; and when the ground shall be frozen, the charge for digging graves may be augmented, at the discretion of the city registrar. And it shall be the duty of the several undertakers to pay over, monthly, to the city registrar, the fees received by them on account of the city, provided for and established in this section.

Sect. 52. The mayor and aldermen are authorized to make and adopt any regulations in relation to the interment of the dead which they may deem expedient, not inconsistent with the foregoing provisions.

Sect. 53. Every person offending against any of the provisions of this ordinance, in relation to which a penalty is not prescribed by the laws of the Commonwealth, shall forfeit and pay a sum not less than five dollars, nor more than twenty dollars, for each offence.

VII. Correspondence with the Medical Society.

Boston, Oct. 1, 1849.

To the Councillors of the Massachusetts Medical Society :—

Gentlemen,—Commissioners have been appointed by the State, under a resolve of the Legislature, passed May 2, 1849, "to prepare and report to the next General Court, a plan for a sanitary survey of the State, embracing a statement of such facts and suggestions as they may think proper to illustrate the subject;" and they desire to avail themselves of all the information within their power to obtain in relation to the object of their appointment. They would feel themselves under special obligations to the Councillors of the Massachusetts Medical Society—

First, for any suggestions as to the objects of such a survey;

Second, as to a plan by which these objects may be accomplished; and

Third, for any facts or statements which may illustrate the subject.

Among other matters, the Commissioners desire to present, in their report, a systematic nomenclature of diseases and causes of death, which shall meet general approbation, and serve as a simple classification for sanitary and statistical purposes; and as a standard of comparison of the different parts of the State with each other and with other places. In the enclosure is a report of a plan recommended by the National Medical Convention, at Philadelphia, in 1847. This nomenclature was prepared on the basis of that used by the Registrar General of Births, Marriages and Deaths, in England, and is fully

explained in his Fourth and Seventh Annual Reports. We would thank you to inform us how far it meets your approbation, and what alterations, if any, you would propose.

In behalf of the Commissioners,

I am, with great respect, your obedient servant,

LEMUEL SHATTUCK, *Chairman.*

A letter of a similar purport was addressed to the Consulting Physicians of the city of Boston. The replies are subjoined :—

BOSTON, Oct. 9, 1849.

To LEMUEL SHATTUCK, Esq., *Chairman of the Sanitary Commission :*

SIR,—In conformity with your request, I have laid before the Board of Consulting Physicians of the city of Boston, your communication on the subject of a sanitary survey of the State. The Board having been informed that the Councillors of the Massachusetts Medical Society have appointed a committee, who will probably make a laborious investigation of the subject, have thought it best to propose to that committee to see the results of their labors, to which they will either give their approval, or will invite a conference on such points as it might be useful to discuss.

Respectfully, your obedient servant,

J. C. WARREN.

To LEMUEL SHATTUCK, Esq., *Chairman of the Board of Commissioners on a Plan for a Sanitary Survey of the State :—*

SIR,—Your communication of the date of October 1st, addressed to the Councillors of the Massachusetts Medical Society, and asking their advice in respect to the proposed sanitary survey, was received on the 3d, and then referred by the Counsellors to the undersigned, as a committee for consideration and answer.

The commissioners, being appointed to furnish a plan of a sanitary survey merely, have limited their inquiries of the Medical Society to three points. They only ask to be advised as to—

The objects of the proposed sanitary survey,

The plan by which the survey shall be conducted,

And some facts which may serve to show the practicability and usefulness of the survey.

The objects of the sanitary survey, and some of the reasons which should influence the Legislature in authorizing it, have been stated at considerable length in two memorials which have been presented to the Legislature,—one in 1848, by the American Statistical Association, printed as House document No. 16, of that year, and the other by the Massachusetts Medical Society in 1849, and printed as House document No. 66, of that year.

It is the object of the proposed survey to ascertain the hygienic resources and influences of the State ;

To know the amount of vitality, of life and health enjoyed by the people of this Commonwealth ;

To learn whether there are any differences in regard to life and health among our people, and what those differences are.

Even without inquiry, it is manifest that the health, strength, and length of life differ very widely in different persons.

And it is suspected, though not demonstrated, that these differences exist in regard to whole communities living in different places or regions, and in regard to different classes living together.

It is, then, to remove or to confirm this last suspicion that the sanitary survey is asked to inquire—

Whether there are differences of vitality—of life and health, among the people in the different parts and classes of the State;

In the interior and on the seacoast;

In the eastern counties exposed to the east winds, and in the western counties, which are protected by the high lands from these winds;

In the high and mountainous districts, and in the lower and level towns;

In the dry and level towns, and in those which are low and marshy, as in the valley of the Concord River;

On the borders of ponds and streams which vary but seldom in fulness, and on the borders of artificial mill-ponds and streams that are interrupted by dams, and which, varying constantly in fulness, leave their muddy margins bare for the exhalation of vapors, perhaps of miasms;

In the dense cities and in the open country, with pure air;

In houses that are well ventilated, and those that are crowded with occupants and without the means of obtaining pure air for respiration.

The survey proposes to ascertain, whether there are differences of vitality in the various kinds of occupation,—

Among those engaged in agriculture, in manufactures, in the mechanic arts, in navigation, trade and commerce, the learned professions, &c.

There may be differences of life and health in different domestic conditions, of prosperity and adversity, of wealth and poverty.

The tone of health may be higher or lower and the length of life greater or less among families whose dwellings are variously situated, on dry or wet sites; on natural or on artificial land; in the vicinity of, or at a distance from, the seats of decomposing animal or vegetable matters, as burial-grounds, cemeteries, slaughter-houses, barn-yards, cesspools, depositories of offal, manufactories of glue, leather or chemicals, laboratories, &c.

These differences of locality, circumstance, and condition, suggest themselves to the undersigned as worthy of investigation in regard to their sanitary influences. But they are not all; more might be mentioned, and the progress of the survey will probably discover many others that have not been exposed or even suspected.

In those countries where such a sanitary survey has been made, life and health are found to be different in their various localities, circumstances and conditions; and in some of them these differences are very great.

Some partial inquiries, and the general belief of those who are most familiar with sickness and suffering, afford good ground for the suspicion that similar differences exist here; and it is important for the people to know whether it is so or not, and to what extent.

The facts of health and sickness, of life and mortality, can be ascertained by the sanitary survey as certainly and as easily as the various conditions of agriculture were by the agricultural survey, which have been effected by the authority of the Legislature and laid

before the people of the Commonwealth in the admirable reports of Mr. Colman; or as the various kinds of animal and vegetable productions, and mineral resources, which the Commission of Natural History examined and published in their valuable reports.

Wherever differences of vitality are found to exist in connection with differences of circumstance, condition, locality, or manner of life, it may be assumed as probable, at least, if not certain, that the former are the consequences of the latter.

It is an unquestionable principle, that, in the operations of life as well as in those of dead matter, there is no event without a cause adequate to produce it.

It is equally certain, that in life as well as in death, in similar circumstances and conditions, like causes produce like results. In this law of vital action, there is no uncertainty nor variableness. There is no more caprice or mystery in the flow and ebb of life, in the maintenance of health, in the cause of sickness or in the event of death, than there is in the flow and the ebb of the tides, in the movements of the stars, or in the action of gravitation.

It must be admitted as a universal fact, that, from any definite amount of vitalizing or destructive influence acting upon living beings, there will follow a definite and corresponding amount of health, strength and life, or of sickness, weakness and death. Between the amount of the cause and the amount of the effect there is an exact relation. No matter how weak or how powerful may be the deteriorating cause, precisely corresponding to that will be the deterioration. It may be so slight as to escape notice, and therefore seem not to follow; it may be only a little impediment to the vital processes, a little indisposition to think or act, or some headache or oppression at the stomach; or it may be a fever or dysentery, or other disease of greater or less severity, which may result in the extinction of life; but in no case does it fail to grow out of, and to correspond with, the vitiating influence that has acted or is acting upon the human constitution.

Whatever may be these differences of fulness and energy of the vital actions, in individuals or in classes, or in whole communities living in various localities, they are produced by some causes connected with those individuals, classes, or communities; by something in their organization, in the circumstances about them, the atmosphere they breathe, the supplies that are given to their natural wants, the privations they endure, the manner in which they are employed, or in the habits they indulge, which may be assumed as the causes of their diseases or the depression of life.

Wherever, then, the vital energies are depressed, or disease prevails, or life is shortened below the average of the experience of the people of the State, or of mankind, there it will be proper to inquire into the circumstances, conditions and habits of those who thus suffer, and ascertain the causes of their low health. And when these causes shall be made known, then the people may avail themselves of this information, and avoid those circumstances, conditions and habits, connected with which health is low and life is short, and betake themselves to those in which health is high and life is long, or modify them in such a manner as to make them not only not injurious, but, on the other hand, beneficial.

It is not to be assumed here, that either science or popular observation has demonstrated the connection between disease and its cause. In many, perhaps in most cases, these causes have baffled the acutest investigation. Sometimes, without any discernible difference of circumstances, conditions or habits, some persons are sickened and others remain well. In others, there seem to be sufficient causes in their peculiarities of circumstance, condition or habits, but yet the connection between these peculiarities and the consequent or coëxisting bodily ailments has thus far been so subtle as to elude the eye of human observation.

But in many other cases, these causes are sufficiently tangible and palpable to encourage investigation, with some, perhaps with satisfactory success. At the very least, the sanitary survey can reduce the number of probable causes to the number of distinguishing peculiarities of person and circumstance, out of which science may be able to select the true and efficient cause of disease.

If it should be found, that there is more mortality in the early and middle periods of life, and especially in infancy, or if certain diseases of the endemic, epidemic and contagious class, are shown to be more prevalent in cities than in the open country, then it will be reasonably supposed, that density of population, or some of the circumstances connected with it, are less favorable to the development and the maintenance of life than the scattered condition of rural districts.

If in certain localities, or occupations, or classes of people, certain diseases are more frequent and fatal than in others, then it will be natural to look for some cause connected with these localities, occupations or classes, that produce these differences of disease and death.

The mortality from consumption, in Massachusetts, during the last four registered years, was 57 per cent. greater among females than among males; and in the state of New York, during the registered years of 1847 and 1848, this difference was 37 per cent. against the females.[1] This excess of mortality from consumption must be charged to something connected with the organization, the condition, or the habits of the female sex.

These are mere specimens of the topics of inquiry. Many others might be mentioned, but they will readily occur to you, and many more will present themselves to the person or persons to whom the survey shall be entrusted while in the progress of the work.

This investigation should be extended so as to reach all the varieties of locality, circumstances, employments, conditions and habits, of the people of this Commonwealth, and thus ascertain and show to the

[1] Deaths from consumption in Massachusetts, recorded in the Annual Registration Reports, for the years 1845, 1846, 1847 and 1848 :—

Females,	5458
Males,	3476
Excess of females,	1982
Per cent. of excess,	57

Deaths from consumption in the state of New York, according to the Registration Reports for 1847 and 1848 :—

Females,	3888
Males,	2825
Excess of females,	1063
Per cent. of excess,	37

world how far each and all of these are favorable or unfavorable to the life and health of man.

The plan of the sanitary survey should include all the varieties of deterioration of human life, and all the varieties of circumstance, condition and locality, that may be suspected to be the causes of disease.

It is, therefore, more comprehensive than the plans of survey pursued in some other countries, where they were adopted for specific purposes and directed to specific objects.

In England, the Poor Law Commissioners, by order of the government, first established an inquiry into the sanitary condition of the laboring classes. This inquiry was conducted by Mr. Chadwick, the secretary of this commission. Afterward, the same board directed another inquiry into the practice and effect of interment in towns upon the health of the people. This investigation also was conducted by Mr. Chadwick.

Subsequently the government appointed a large and distinct commision to make an elaborate and minute inquiry into the health of towns.

Beside these, Parliament has caused several other inquiries, through other committees, to be made as to the condition and health of children and other operatives employed in factories, mines, &c.

All of these commissions pursued their investigations separately, and all of them called to their aid, wherever needed, the ablest men in the kingdom, and such as were engaged in such pursuits as made them familiar with the several objects of inquiry.

Each of these commissioners made large and exceedingly valuable reports, and revealed such a state of things, such an amount of degradation and low health, connected with removable causes, as few not familiar with these matters suspected to exist in any civilized nation.

In France, M. Villermé and Parent Duchatelet were directed to examine certain specific objects, as the condition of the supplies of water, drainage, &c., in Paris ; the effect of slaughter-houses upon the health of the neighborhood, and of tobacco upon those who used or worked in it, &c.

Taking counsel of the experience of these nations, it now seems best, that all of these and other sanitary objects should be embraced in one plan and entrusted to one commission for investigation.

There are various ways in which this commission may be constituted.

As the Bank Commission, of which each member gives himself to the work.

As the Board of Education, who assume only general directing power and perform no labor. They elect a secretary on whom devolves all the work of the commission.

Or, as the Commission for the Trigonometrical Survey, or the Geological Survey, or the Natural History Survey, or the Agricultural Survey. By resolution of the Legislature, " the Governor was authorized and requested to appoint some suitable person or persons to make a thorough geological, mineralogical, botanical and zoological survey of this Commonwealth under his direction." The Commissioners for the Trigonometrical and Agricultural Surveys were appointed in the same manner.

Of all these methods of constituting the proposed commission, the second and third alone seem to be eligible. For all the labor will and ought to come upon one man, who must devote his whole mind exclusively to the work.

And of these two plans, the last is to be preferred, because this inquiry, like the geological and other natural history surveys, should be entrusted to the most competent person, who must pursue that course which his knowledge of the whole subject and his increasing experience point out to him as the best.

It is obvious that this is no small work. It cannot be accomplished without great and persevering labor, much travel to all parts of the State, much intercourse with the people, and often painful and disagreeable familiarity with the seats of disease, the abodes of poverty, privation and suffering, and the places of filth and noxious effluvia.

A wise and provident government would not limit the time that should be given to this great work ; but it would leave it, as the former Legislatures left the trigonometrical and geological, and other surveys of kindred nature, in the hands of the proper commission until it should be entirely finished. For, doubtless, this survey of man's health will demonstrate, as the commissioners for the survey of minerals, vegetables and animals, showed in regard to wealth, that " the resources developed uniformly seemed to increase in proportion to the minuteness and extent of the investigation." The farther and more minutely the inquiries shall be made, the more differences of life and health may be discovered, and more varieties of locality, circumstance and condition, the probable or certain causes of vital deterioration will be exposed.

It would be easy to add numberless facts to illustrate the advantages of the proposed survey. They may be found in the English and the French reports in great abundance ; and some few have been discovered by inquiries here.

It is not necessary to quote many at this time, yet there are some things to which the attention of the Legislature may now be very properly drawn.

There is a very common notion that the privations and discomforts of poverty are at least compensated by health. The robust strength of the laborer is often referred to as an example of this compensation. The children, especially of the poor, who are often neglected and uncleanly, in want of proper clothing, and exposed to the severity of the elements, are quoted as proofs of the uselessness of attending to many of the rules of health. But all inquiry into the condition and health of the poor shows the fallacy of these opinions and the evil consequences of following them.

Mr. Chadwick's Report on the Sanitary Condition of the Laboring Classes, shows that, within the reach of his inquiry, the average age at death of all persons, including father, mother and children, in the families of the most prosperous classes was 42.6 years, and in the families of the poor only 20.4 years.

Among the prosperous only 20 per cent., and among the poor 50 per cent., of the deaths, were of children under five years of age.

According to Benoiston du Chateauneuf, among 10,000 persons living at each age and in each class, in Paris, there died—

Age.	Rich.	Poor.
30 to 40,	108	157
40 to 50,	117	213
50 to 60,	199	359
60 to 70,	360	750
70 to 80,	804	1436

An analysis of the bills of mortality of the town of Dorchester for more than a quarter of a century showed, that those who had died within that period in the families of the poor had enjoyed an average longevity of only 27.4 years, while those who died in the families of the prosperous had lived, on an average, 45.6 years. Among the poor 31 per cent., and among the prosperous only 12.4 per cent. of all the deaths were of children under two years of age. Among the poor only 9 per cent., while among the rich 27 per cent. lived to the age of three score and ten years.

Wherever this inquiry has been made a similar result has been obtained; the revelation of a lower degree of health and a shorter life among the poor, and a higher degree of health and a longer life among the more prosperous classes.

EDWARD JARVIS, } *Committee of the*
JOHN D. FISHER, } *Massachusetts*
S. PARKMAN, } *Medical Society.*

Boston, Dec. 10, 1849.

VIII. Circular prepared by the Commission, and recommended to be used by the General Board of Health, in soliciting information concerning the Sanitary Condition of the State.

Boston, 18 .

To the Board of Health of

Gentlemen,—The General Board of Health are making investigations into the condition of the different parts of this Commonwealth, to ascertain the causes which affect the health of the inhabitants; and, for this purpose, they have addressed the following inquiries to the Local Boards of Health of the several cities and towns, and to some other persons. It is their desire that such an examination should be made as will secure the result they have in view. You are requested to undertake the investigation in your town. It is not expected that you will answer every inquiry: the information sought for by some of them is already in our possession. Some are of more importance than others; a few are applicable only to cities and populous places, and may not be to your town. Such as require your particular attention we have marked with a pen. The Board firmly believe that the importance of the subject to every person in the State, and to your town especially, will secure the hearty approval of every good citizen. They would suggest, as a preliminary step, the formation of a Town Sanitary Association, for the purpose of coöperating with you, by their aid and assistance, in obtaining the information.

The answers may be written on a separate sheet, and numbered with the same numbers as the inquiries to which they relate. Or a general description of the sanitary condition of the town may be given,

embracing such of the topics suggested as may be applicable to that particular locality. If you can give any information in regard to the whole subject, or any matter connected with it, which might be material or useful as illustrations, even if it should not be elicited by the inquiries, you will please to do it. And suggestions as to any practicable remedies which might lead to improvement, will be gratefully received.

Please to prepare and return answers to this circular, with your name annexed, on or before the day of 18 .

With much respect, I am your obedient servant,

Secretary of the General Board of Health.

I. *Inquiries relating to the Natural and Atmospheric Condition of the Town.*

1. What is the situation of the town? as to the surrounding country? as to its distance from the sea-shore or from tide-water?

2. What is the exact latitude of the village, or the central part of the township?

3. What number of square acres does the township contain?

4. What are the general characteristics of the soil? its surface and its subsoil? whether alluvial, sandy, clay, granite, or other kinds? Are there any minerals in the town? if so, what kind? Are there any caves, caverns, or other peculiarities in the natural formation?

5. Please to describe its general horizontal features; the plains and their extent; the hills, their frequency, extent, and height. What is the height of the town, in feet, above tide water? of its lowest elevation? of its highest elevation? of particular places?

6. What is the extent and condition of the marshes, bogs, low meadows, swamps, and natural ponds? Have they stagnant water? and if so, how much, and where located? and are they sometimes covered with water, and sometimes dry? and are they sources of miasma or malaria?

7. Please also to describe the rivers and streams of water. Are they stagnant, sluggish or rapid? and are they subject to rise and fall, and to overflow their banks? if so, at what seasons, and to what extent? What is the number of feet of descent of each stream in its passage through the town? and what is the quantity of water in square feet which passes in the stream, at a given point, each twenty-four hours? the greatest quantity? the least quantity? the average quantity?

8. In towns bordering on the ocean, how high does the tide rise and fall? and what extent of land is covered at its flood and laid bare at ebb?

9. What is the principal natural growth of forest trees and shrubs? What plants and other vegetable productions grow in the town, which have been used for medicinal purposes? Please to give a list of them, and state whether they are rare or in abundance, and for what purposes have they been used?

10. What insects, reptiles, fish, and other animal productions, are found in the town? Please to describe them, and state what kind, and in what season of the year they are found, or are most abundant.

11. Have meteorological registers been kept in the town? Can the variations of the barometer, thermometer, winds, weather, quantity of water in the form of rain and snow, the electric and other atmospheric phenomena, be shown, for different years and seasons? Are they the

same in high as in low places? What is the date, in different places, of the appearance and disappearance of frost and snow? Are any places subject to fogs, and some more than others? What is the effect of the atmosphere in different places on the growth and preservation of fruit, and agricultural and other vegetable productions?

12. Please to specify and describe any other *natural* characteristic or peculiarity of the town worthy of notice.

II. *Inquiries relating to the Artificial and Local Condition of the Town.*

13. How is the land of the town used? How much of it is unimproved, improved, covered with water; with wood; used for grazing, for grass, for tillage, or for other purposes? State about the quantity each.

14. Have the swamps, low lands and meadows been cleared, drained, filled up, or otherwise changed from their natural state? or is stagnant water still permitted to remain?

15. Are the streams of water obstructed in the natural flowage by dams, or other causes? if so, for what purpose? and are parts of the adjacent lands sometimes overflowed and sometimes dry?

16. What is the extent of the densely populated part or district of the town? Is it crowded or otherwise?

17. Are the streets laid out nearly straight and at right angles, or are they irregular in their courses? what is their width? Are there narrow lanes, alleys, or courts, built upon? Are any courts closed at the end? Can the streets be extended into the suburbs, or are they obstructed? Are there open spaces for commons, parks, or for other purposes? if so, are they ornamented with trees or shrubbery?

18. Are the inhabitants well supplied with water? for domestic use? for cleansing the streets? for fires? By wells, or otherwise? Please to describe the mode of supply. What is the quality of the well or other water? is it hard or soft, or will it wash with soap? Is it uniform or dissimilar in all places, or in the same place at all times? Has it been analyzed? if so, please to give the analysis and description.

19. Is there any public survey or plan of the town or district, containing a system of levels from a common data, for the information of builders, for the purpose of regulating public or private drainage, so as to protect the public health, or for convenience? Are the houses built on the natural elevation? if not, what changes have taken place? Is there any restriction as to the plan or mode of building?

20. What are the regulations for surface drainage? Are the streets, alleys and courts paved or unpaved? and are they laid out with proper inclinations for the discharge of the surface water, or are they uneven and favorable for the retention of stagnant moisture and accumulation of refuse thereon from the houses? Are there any stagnant pools, or open ditches, contiguous to the dwellings, or in the vicinity?

21. Are there any arrangements for under-drainage? if so, are they efficient or defective? Are there any sewers or branch drains from the houses to the streets? Do the contents of house privies empty into such sewers? Have they cesspools? Are the drains properly cleansed by water, or otherwise; or does the refuse accumulate therein, so that they become choked and emit offensive smells into houses or streets? Are there any means used to prevent the escape of such smells?

22. Are houses built on land redeemed from the ocean? if so, does the tide ebb and flow near or under the foundation? and does it produce dampness, or emit unpleasant smells?

23. What is the general structure and condition of the dwelling-houses? Are they built of brick or wood? Are they warmed by stoves or fire-places? lighted by gas or otherwise? ventilated? Are any houses built back to back, so as to obstruct the free circulation of the air? Have they proper privies? Are they provided with dust-bins and places for offal? Are there any cellar dwellings? if so, how are they lighted, warmed, and ventilated?

24. Are there public or private wash-houses and bathing-houses, to which the inhabitants are admitted? if so, are they free, or is a fee charged? what fee is charged?

25. Are there any buildings owned by incorporated or other companies, or by private individuals, for manufacturing purposes, where laborers congregate? Please describe them, and state their peculiarities.

26. Do any manufacturing establishments, slaughter-houses, or other works, supposed to be injurious to the public health, exist in or near the most densely populated parts of the town?

27. Are the churches, schoolhouses, almshouses, hospitals, and other public buildings, properly constructed as regards their site, light, heating apparatus, and ventilation? Please describe them, and their excellences and defects in these particulars. Have the schoolhouses open and convenient places for exercise and play-grounds? and are they provided with proper privies?

28. Please to describe any other peculiarity worthy of notice in the artificial and local condition of the town.

III. *Inquiries relating to the Number and Personal Condition of the Inhabitants.*

29. What is the number of inhabitants in the town? Please to specify the number of each sex, and of each age, (especially those under 15, from 15 to 60, and those over 60,) and such other characteristics as are within your power to give.

30. What is the average number of persons to each acre? of the whole town? and of the most densely settled district or portion of the town?

31. What is the number of families? and the average number of persons to each family?

32. What has been the number of births, marriages, and deaths, for each of several years past?

33. What is the number of dwelling-houses? and the average number of persons to each? in the whole town? and in the most crowded district or portion of the town? How many persons have been found living in one room?

34. What is the aggregate full and true valuation of the estates? real? personal? total? and what is the total tax assessed, and the rate per cent. on one hundred dollars of this full valuation? Please specify these facts for several past years.

35. What is the number of ratable polls? and the number of legal voters on the day of the annual election in November?

36. How many persons own real estate? and how many live in

their own and how many in a rented house? and what is their proportion to the whole inhabitants?

37. What is the number of public schoolhouses? value of the schoolhouses? What sum of money was raised by tax last year for the support of public schools? What is the number of persons in town between five and fifteen years of age? How many of this number were at school at any time, more or less, during last year? How many, over twenty years of age, cannot read and write?

38. What is the number of places of religious worship? to what denomination of Christians do they belong? What number of sittings do they contain, or what number of persons will they accommodate? What is the cost of the churches? What is the annual expenses of public worship?

39. What is the general character of the inhabitants as to habits? whether industrious, temperate, or otherwise? as to means of subsistence, whether ample, moderate, or poor? What is their principal occupation?

40. What is the price of mechanical and other labor? for males? for females? including board? exclusive of board? Is there a demand for all the labor offered? What is the price of some leading articles of provision? flour? meal? potatoes? &c. What is the price of wood? of coal? and which is most generally used?

41. Has any account been taken of the products of industry of the town? if so, please specify when such accounts were taken, and where the information may be obtained.

42. What is the number of public hotels or lodging-houses? Where intoxicating liquor is sold? where it is not sold? What is the number of other places where such liquor is sold at retail? Are licenses granted to sell such liquor?

43. What is the number of public paupers? Please state the males and females separately, and the resident, non-resident, American, foreigners, and children of foreigners. What is the cause of their poverty? How many widows, orphans, or others, were made paupers by the death of friends on whom they depended for support?

44. How many inhabitants of the town, during the last year, were committed for trial for crime, and how many convicted? Please to state the place of birth, sex, age of each, if practicable.

45. Please to give any other valuable information bearing upon this division of the inquiries.

IV. *Inquiries relating to the Municipal Regulations and Sanitary Police of the Town.*

46. Is there a board of health, who act independent of the mayor and aldermen of cities, or of the selectmen of towns? if so, when was it established, and what are its regulations? Are records of their proceedings preserved? Is there a health officer in town, to whom complaints concerning nuisances, and other matters relating to health, are made? if so, of what profession is he?

47. If the selectmen have acted as a board of health, when and for what purpose have they acted in that capacity? and have they preserved separate records of their proceedings relating to such matters?

48. Are scavengers or other persons appointed for cleansing streets, for the removal of offal, the refuse thrown from houses, night-soil, or

other nuisances or impurities? if so, under whose direction do they act? Is such refuse used for agricultural purposes?

49. Have any means been adopted for the prevention of malaria, or the noxious emanations from ponds, swamps, or other unhealthy districts?

50. Has provision been made by the town for the vaccination of the children and other inhabitants? if so, how often has it been done, and under what regulations?

51. Have temporary or permanent hospitals been established or erected for the accommodation of the sick? if so, please to specify what they are, and for what purposes erected.

52. Are dispensaries provided for giving medical advice and medicine gratuitously to the poor? and do charitable societies exist for the relief of the poor during sickness? If either, please give an account of them.

53. Has any sanitary association been formed for the collection and diffusion of information relating to health?

54. How many places for the burial of the dead are there in the town? Please to describe each? the size, in square acres or rods? the date when first used as a burying-place? the distance from the village or densely populated parts of the town? Are they owned by the town or by associations? Is any one owned exclusively by any one religious denomination? Are they divided into lots and assigned to different families, or what regulations are adopted for the right of family or personal burial? What is the present condition of the burial-grounds? Are they well fenced, ornamented with trees, or otherwise? What number of persons were buried in each ground in each of the last five years? Are there any private or family burying-grounds not connected or included with those owned by the town or by companies? if so, please describe them. How many tombs are there in town, and how situated? Are any under churches? if so, how many, and are they used for burial? What number of bodies were interred in each burial-place under churches during the last year?

55. What are the established fees of burial to undertakers and others? What is the total cost of burial? Please state the particulars of several different bills for the expenses of interment.

56. Please to describe any excellency or defect in the sanitary police of the town.

V. *Inquiries relating to the Health, Sickness, and Mortality of the Inhabitants.*

57. What is the general character and condition of the town, whether healthy or unhealthy? What is the state of the most unhealthy parts, or where the highest rate of mortality is supposed to occur? What are the causes usually assigned for such mortality?

58. What is the number in your town of each class or denomination of physicians? Which class receives the greatest patronage?

59. Have cases of fever, dysentery, or other epidemic, endemic, or contagious diseases, or others of fatal character, been of frequent or rare occurrence? If of frequent occurrence, please to give a list of such deaths, specifying the disease of which each died; and state whether it was mild or malignant in character; and under what cir-

cumstances or causes it occurred. Please also to state the same facts in each case in regard to consumption.

60. What was the aggregate annual amount of sickness suffered in different parts of the town, and among families and persons of different classes and occupations?

61. What was the amount of sickness in the public schools and other seminaries of learning in the town?

62. Please to give, from the most authentic sources within your power, the sanitary history and condition of the town in past years, specifying the healthy and sickly years, and the number of deaths, and causes of such sickness and deaths that happened in each. Please to give a list of the deaths; specify the ages for the last three or five years, according to the forms prescribed by the laws of the State, or by the General Board of Health.

63. State the *atmospheric causes of disease.* In what year and month of the year; and in what kind of weather and season, hot or cold, wet or dry, changeable or steady, or otherwise, did the diseases of different kinds occur? Whether on a hill, plain, or in a valley, exposed or protected from north, south, east or west winds? or in places subject to fogs or early frosts; and whether in a general epidemic or healthy season? Was there any peculiar circumstance observed in the appearance of insects, fish, or other animal life; or in vegetable productions; or in the electric or atmospheric phenomena? What other atmospheric cause occurred?

64. State the *local causes of disease.* Was it near to or distant from running water? or in the vicinity of marsh, bogs, low lands, drained or undrained, sometimes overflowed, sometimes dry; near stagnant water; natural or artificial mill or other ponds, constantly or occasionally full? or near other sources of malaria? Was it near any vegetable or animal matter in a state of decomposition; or other filth, impurities, or noxious exhalations, or unwholesome endemic influence, or contagious disease of any kind? Was the house or houses, in which different diseases occurred, unduly crowded or otherwise? properly lighted, warmed, and ventilated? supplied with pure water? Were the springs and wells high or low? State any other local cause.

65. State the *personal causes of disease.* Whether the persons or families were natives of the town, or of other parts of the United States, or foreigners, or children of foreigners. If not natives, how long resident in the town, or in their particular place of abode. What was the profession or occupation of the head of the family in which sickness or death occurred, or of the person, if over fifteen years of age? What was his hereditary or acquired constitution? What was the means of subsistence of the family, whether ample, moderate, or poor? Did they own or rent the house in which they lived? Were they industrious in their habits, cleanly in their persons and habitations, temperate and prudent in their diet and mode of living, or otherwise? Had their previons general health been good? or had they been exposed to personal contagion? Was the cause accidental or otherwise? State any other personal cause.

66. In your opinion, what proportion of the sickness and mortality of the town might be prevented if the causes of disease were known, and the laws of health were understood and obeyed?

VI. *Conclusions and Recommendations suggested by the Facts elicited.*

67. What inferences do you draw, what deductions do you make, or what conclusions do you derive, from the facts elicited? What suggestions would you make, or what measures would you propose or recommend, either municipal, social or personal, to improve the sanitary condition of the town or its inhabitants? Please to specify measures and remedies; and suggest a mode by which they may be practically applied, and successfully carried into execution.

IX. Circular of the American Medical Association. [*See p.* 167.]

At the Annual Convention of the American Medical Association, held in Baltimore, in May, 1848, the following gentlemen were appointed a Committee on Public Hygiene:—

Drs. James Wynne, Baltimore; Charles P. Gage, Concord, N. H.; John M. Thomas, Washington, D. C.; Isaac Parrish, Philadelphia; P. C. Gaillard, Charleston, S. C.; L. P. Yandell, Louisville, Ky.; J. P. Harrison, Cincinnati, Ohio; Albert Smith, Peterborough, N. H.; Josiah Curtis, Lowell, Mass.; Edward H. Barton, New Orleans; John H. Griscom, New York; E. D. Fenner, New Orleans.

It is the purpose of this committee to make a sanitary report, embracing the principal cities in the United States; and with a view of facilitating their inquiries, you will greatly oblige by furnishing the member of the committee who requests the information of you, with answers to the following questions:—

1. What is the population of the town, and its position in relation to the surrounding country; what the geological formation of the country, the nature of its surface and subsoil, and the means of, or impediments to drainage, more especially within the town limits?

2. What is the character of the town in reference to health? What is the condition of its most unhealthy and crowded parts, where disease is supposed to be most prevalent; and to what causes are such diseases mainly attributable?

3. What are the arrangements for drainage? Is there a public survey of levels? Are the streets and alleys paved and laid out with a proper inclination for surface drainage; or are they defective in these particulars? Is the drainage effected by sewers or surface drainage, and is the mode adopted effective?

4. What is the mode and expense of cleansing the streets? Are the courts and alleys occupied by the poor cleaned, and how often? Where is the refuse from the houses deposited; and where is the street manure kept, and how disposed of?

5. What is the condition of the more densely populated parts of the town in respect to ventilation? Are the streets wide or narrow? Are courts and alleys built up, and closed at the end, and what is the character of the houses of the poor? What number of families occupy one house; how many persons live in one room, and what provision for ventilation? How are the houses warmed in winter?

6. What is the system of public schools, and its influence on health? At what ages are children received into them? What is the size of room, the number of occupants, time allotted to instruction,

means afforded for exercise in the open air, and length of summer vacation?

7. What hospitals and dispensaries? How are the public buildings ventilated, as churches, &c.; and what provision for public grounds or squares?

8. From what source is the town supplied with water? What are its qualities, and is it abundant?

9. Are the municipal regulations on the above subjects effective or not?

By order of the committee: JAMES WYNNE, *Chairman.*

Baltimore, May, 1848.

X. Sanitary Organization recommended by Dr. Simon, Medical Officer of Health for the City of London, extracted from his Report, made Nov. 6, 1849.

Having now enumerated the sanitary evils of the city, and the remedies which appear to my mind most appropriate for their removal, it becomes desirable that I should point out to you the organization which seems necessary to be adopted. The object of this organization lies in a word: Inspection; inspection of the most constant, most searching, most intelligent, and most trustworthy kind, is that in which the provisional management of our sanitary affairs must essentially consist.

I presume I may take for granted that, in some form or other, a committee of health will exist. I may, perhaps, further assume that such a committee will have authority to entertain all subjects relative to the sanitary improvement of the city, and to make thereon such recommendations as shall seem fit to them; and, further, that they will make it their business to receive periodical intelligence, as complete as possible, on all variations in the public health, and on all circumstances likely to affect it.

In order that any committee, acting for sanitary purposes within the city, shall have a reasonable chance of success in its endeavors for the public good, the following means of information will be necessary for its use:—

1. That an account should be kept, corrected year by year, of every house within the city, as to the area of building, the number of floors, rooms, windows; as to its ventilation; as to its drainage, water supply, and other facilities for cleanliness; as to its method of occupation, and number of inhabitants.

2. That from this account there should be made out, at least twice yearly, a list of houses and streets remaining in an objectionable sanitary state; and a list also of such as may have been remedied to the satisfaction of the committee, since the formation of their last preceding list.

3. That, while trades injurious to health or offensive to their neighborhood, are suffered to continue within the city, there shall be given periodical reports on the condition of such establishments, to the end that they be maintained so as to be least detrimental to the public health.

4. That record of every death registered as occurring in the population of the city should lie before the committee; and

5. I consider it quite indispensable that they should likewise receive the largest and most accurate returns which can be procured of all sickness occurring among the poorer classes; and particularly in respect of all epidemic, endemic, and infectious disorders, that the medical practitioners who communicate the fact of illness should likewise report the existence of any local causes, or other influences of general operation, which have tended to produce, or are tending to continue, such illness.

As I formerly stated by anticipation, so now I repeat from experience, that nothing deserving the name of sanitary administration can exist in the city without accurate periodical intelligence of all such sickness at least as comes under parochial treatment, or without such reports on the local sanitary conditions and other causes of disease as were desired to accompany that intelligence. No health committee can exist for a month without it; nor can any officer, having proper respect for his character, consent to be considered responsible for the health of a population whose illnesses he learns only from their posthumous record in the death register.

During the recent prevalence of cholera, the health committee established a system of daily reports. What needed to be daily during a period of pestilence, might fitly become a weekly communication at all other times. I have already reported to the health committee, and I beg to reiterate here, that the advantages derived from that system of communication were such as could have been attained in no other way.

I may remind you that each of the gentlemen referred to, serving under the poor law, works within a certain small and definite district; that he is therefore peculiarly competent to speak on the state of the population in that district, on their habits and necessities, on their customary condition of health, and on their liability to epidemic disease; and that the total staff of these officers, taken collectively, representing the medical practice of the whole city, can supply exactly that kind of detailed and precise information which is most serviceable to your officer of health, in guiding him to those more general and comprehensive conclusions which it is his business to lay before you. These gentlemen are the habitual medical attendants of the poorer classes; day by day, in the unobtrusive beneficence of their calling, they pass from house to house, and from court to court,—the constant recipients of complaint, or the constant observers of ground of complaint,—amid all that destitute population on whose condition you require to be informed. They are in the constant presence of the pestilences which reign in our worst localities; they are the chief treaters of endemic disease within the city,—of that disease which, by its proportion, measures the success of sanitary changes, or indicates their failure; and it has been the professional education of these gentlemen, as it is their business, to trace such effects to their causes. Their reports would be the authenticated statements of experienced medical practitioners, familiarly conversant with their several respective localities.

That such intelligence will involve an annual expenditure of money, are facts which cannot be doubted. But that the expenditure will be

a judicious one ; that it is indispensable to the effective working of any health committee or any health officer ; that it will be the first step to the mitigation of the disorders reported on ; that it will disclose evils which else would escape recognition and remedy ; that in a few years it will have rendered a general mortality of three per cent. on the entire population of the city a matter of history and a warning, instead of its being as now a present and awful reality ; that in lessening sickness and death it will have stayed a large source of pauperism, will have diminished the number of occasional and habitual claimants of relief, and will have become a measure of real and considerable economy ; these are points on which, with the utmost sense of official responsibility, I beg to record my deliberate conviction.

Accordingly, I have to recommend that any committee which may undertake the administration of sanitary affairs for the city shall be furnished as completely as possible with information of the nature I have specified.

Another element to which I think it necessary to advert, in connection with a future sanitary organization for the city, is this : that some permanent arrangement should be made, by which the maintenance of exterior and interior cleanliness, the enforcement of scavengers' duties, the suppression of nuisances, and the like, should be brought under habitual and systematic surveillance ; one by which all breaches of your present or future sanitary regulations may be quickly detected, and may be visited with their appropriate penalties as speedily and as certainly as possible.

It is in respect of matters of this sort, and of such only, that I think the services of the police force might usefully be employed. Their want of special education, and their employment in other duties, are circumstances which appear to me quite conclusive for objecting to their utilization as sanitary reporters. But while I entertain the opinion that their employment in the latter direction would be both fruitless and inconvenient, I would submit that their numbers and their diffusion through the city qualify them well to act against all causers of nuisance, as they act against other offenders, both detectively and preventively ; and I would venture to repeat a suggestion, "that the police should consider it part of their duty to report on every nuisance within their knowledge, and on every infraction of such sanitary rules as this court may establish."

XI. Outlines of the Duties of Medical Officers of Health, showing how they can be useful to, and what advantages they will confer on, the community.

Health being a material property, capable of being valued and its loss estimated, the leading causes of loss of health being well understood, and the great extent to which these causes operate having been recently extensively promulgated and illustrated, it becomes important that some attempt should be made to show, in the appointment of men to fulfil the duties of preserving health and preventing disease, first, how they can be useful to the community, and, secondly, what amount of advantages may fairly be expected to be reaped through their agency.

It is clear that health being a condition of life, those alone who have studied the laws of life, and the external and internal agencies which influence it, can be properly aware to which of these external or internal agencies should be referred deviations from the condition denominated health.

Upon a proper discrimination of the causes of disease must ultimately rest the practical usefulness of an officer of health; dealing, as he will necessarily have to do, with broad and comprehensive principles, any hastily adopted and erroneous generalization, or false deduction, will necessarily be attended with correspondingly extensive, imperfect, and unlooked for results. The officer of health, then, must himself be thoroughly informed in ALL the circumstances which affect the health of man, not only in his isolated condition as an individual, but in his social condition, and in his state of aggregation. He must be intimately acquainted with the habits of the people—moral, social and physical—and with their various influences on health. The curative physician exerts himself to remedy the results of disease in man as an *individual;* it is the business of the preventive physician to avert these results to man in his *social and aggregate state.*

Preventive medicine, while it constitutes a special, is itself the highest and most useful branch of medicine, and requires in its missionaries a correspondingly long and special study to become useful promulgators of its doctrines, and workers in its cause.

Without attempting to point out what branches of knowledge and scientific inquiry more peculiarly bear upon the exercise of a health officer's duties, it may be sufficient to remark that the special knowledge of preventive medicine referred to can only be found where much general reading has been united with acute and long-continued observation of the *causes* of disease, and the results which have followed attempts to suppress, or modify, these causes.

The class of zymotic diseases, as they are termed, which embraces the causes of about one half of all the deaths which take place over the surface of the known world, and about a fifth of our ordinary mortality, is the first and prominent point to which the attention of an officer of health must be directed.

To trace the circumstances under which these diseases become developed, which fix them to one locality, or which give rise to their spread over particular districts, whether of towns, countries, or of the whole globe—which confine their operation to certain classes of society, to certain occupations, and to certain ages—which cause them to proceed simultaneously, and in groups, over different countries; to decline after definite periods, again to reappear; to be preceded or followed, in apparent regular succession, one by another; to investigate their connection with blights affecting the vegetable world, with epizootic diseases affecting the animal kingdom, and with meteorological phenomena, are duties which an officer of health will be especially called on to fulfil.

The class of sporadic diseases, though constituting a class at least ten times more numerous in the forms of disease than the class of zymoses, only equals the latter class as a cause of death. Nevertheless, it embraces a vast number of morbid conditions, which have been proved to be as much the result of remediable agencies as the zymoses

themselves. For instance, the tribe of tubercular diseases or scrofulous cachexies—the consumptions, the wastings, the scrofulous diseases and water in the head, which form one fifth of the mortality of England, notoriously are, to a considerable extent, produced by and under the influence of remediable causes. These causes the officer of health will investigate; he will point out the relative frequency of those diseases, and the classes and ages affected; and it will be his duty to indicate the means which may be, according to the preparedness of the people, employed to prevent their occurrence, and lessen their severity.

Another class of diseases—namely, that of the respiratory apparatus, which forms about one seventh of the annual mortality of England, is considered to be greatly induced by those conditions of so-called civilization under which society is now placed. Whether or not a considerable proportion of the working years, and ultimately the lives, of a large proportion of the laboring population, are sacrificed to a vitiated state of the atmosphere, it will be the duty of the medical officer to determine. It will likewise be his duty to point out, not only the agencies which tend to an excessive and inordinate mortality, and general deterioration and waste of health, but the means by which the loss of health and life may be modified.

Noxious trades, unhealthy occupations, over-crowded poorhouses, dwellings, manufactories, lodging-houses, public and private schools and charities, chiefly exert their evil influences through the respiratory organs. The means of preventing these evil influences, therefore, must necessarily form a most important, though unostentatious, branch of an officer of health's duties.

These three classes together, namely, the zymoses, tubercular diseases, and diseases of the respiratory organs, produce at least 53 per cent. of the usual mortality. Their importance, therefore, may be readily appreciated.

Next to diseases of the respiratory organs, those of the brain and nervous system are the most general causes of death. The influence of an advanced state of civilization in producing these diseases scarcely requires comment. Though it is true that an officer of health is not likely to effect much appreciable change in the mortality from this cause, in the same comparatively short period of time which may suffice to bring about a marked diminution in the mortality from the three former classes of disease, yet it cannot be doubted, that as a general improvement will take place in the health and vigor of the community, an excessive mobility and acquired and hereditary predisposition to diseases of the brain and nervous system among the people will be largely diminished. Indirectly, therefore, this class of diseases will be largely affected by the labors of efficient health officers.

Although the class of diseases of the digestive organs only occasions about one fifteenth of the ordinary mortality, it must be remembered that the causes which induce the forms of disease included in this class are intimately connected with those which produce diseases of the respiratory organs. The processes of nutrition and aëration are so essentially dependent one on the other, that wherever an excess of mortality is proved to exist as a consequence of derangements of the latter functions, it may safely be predicated in the class of diseases

of the digestive organs. The unhealthy appearance, the sallow color, the hollow cheeks, the gaunt aspect, the emaciated forms, the stunted growth, the undeveloped frames, the enervated bodies, and physical depression of the inhabitants of cities which have no place in the tables of mortality of the registrar general, are in the main due to defective and impaired nutrition. To admit the potency of the remediable causes of disease in the supplementary stage of nutrition, namely, in the process of the aëration of the blood, and to assert the causes which induce diseases of the digestive organs, the function of which is the elementary stage of nutrition, to be beyond the preventive skill of the physician, would be to assert that the same cause is powerful in the secondary and impotent in the primary stage of nutrition, which is contrary to fact. The causes, then, of diseases of the digestive organs are proper objects of inquiry on the part of a health officer—causes which it would become his duty to attempt to remedy.

Taking, then, the class of zymotic diseases, and in the class of sporadic diseases, the sub-classes of tubercular diseases, diseases of the respiratory organs, of the brain and nervous system, and of the digestive apparatus, it would appear that of the deaths in towns eighty per cent. form fitting subjects for the exercise of that special knowledge which it is the duty of an officer of health to exercise for the benefit of the community; in other words, that a few groups of diseases are the principal agents in the production of an excessive mortality—the great causes of these groups of diseases being even more simple, and easily classified, than the diseases themselves.

The duties of an officer of health may, in the following summary, be thus grouped and defined:—

1st. The duties consist in the *inspection* of the actual condition of a locality, and in the noting the existence of those great causes which influence the health of the inhabitants.

These may be divided into causes within the district, and causes foreign to the district itself, by which is understood all the circumstances connected with its natural position. Of the first class are the locality; the geological nature of the soil and its power of absorbing and retaining moisture; the supply of water, and the meteorological phenomena. Of the second class are, the seasons; the winds which blow over it; the water which passes to it; the proximity of masses of vegetable matter in life, or on the surface of the ground in a state of decomposition; the vicinity of mountains, and other agencies unnecessary here to mention.

2dly. The duties consist in the *ascertaining*, from personal observation, the existence of artificial conditions of things detrimental to health, such as overbuilding in confined spaces; overcrowding in confined spaces; the non-removal of fluid refuse; the inefficient removal of solid refuse; the non or inefficient supply of water for public and domestic uses; the introduction of unwholesome kinds of food, and the various adulterations to which it is subject; the existence of offensive trades, occupations, and manufactures, giving off unwholesome solid products or gaseous emanations, affecting either the public generally, or the workmen employed, or both.

3dly. The duties consist *in the devising and recommending* such works as may be necessary to change for the better the condition of

the soil with respect to its powers of absorbing, retaining and readily giving off moisture: such works as may be necessary for the obtaining an abundant and constant supply of pure water, at high pressure, for the use of all the inhabitants of a community, and for effectually scouring and cleansing all water conduits, and for removing all refuse capable of being carried off by suspension: such works as may be necessary for intercepting winds loaded with malaria; for purifying the water brought from a distance into the locality; and for preventing the decomposition of vegetable matter, in adjacent districts, extending its influence to the district in question, so as to produce malaria: such measures as may be necessary to prevent the overcrowding of buildings in confined spaces; of duly regulating, when practicable, the number of individuals which buildings can accommodate with a due regard to health; and of promoting the introduction of efficient means of supplying to such buildings a quantity of air adequate to the vital demands of the inmates: also such other measures as may be necessary to cleanse, purify and fumigate unwholesome or insalubrious buildings,—and to prevent buildings being occupied as habitations which are incompatible with a healthy existence; in devising and recommending fitting localities for public establishments, where human beings are to congregate, whether these are newly to be erected or are simply to be altered and adapted for new purposes: such measures as may be necessary to ensure the removal of all fluid refuse, and to prevent the decomposition on the soil of solid refuse through its solution in rain or flood water: such measures as may be necessary to ensure the regular, if possible daily, removal of all solid refuse to places beyond the limits of the locality, and where it can no longer exert, in a state of decomposition, an injurious effect upon the health of the inhabitants: such measures as may be necessary to prevent food of an unwholesome or deleterious character being exposed for sale; and to prevent food, whether in a raw or prepared state, being adulterated with articles of a foreign nature, capable of injuriously acting on the human economy; (under such measures, all regulations, with regard to the use and supply of colors to color, and matters to adulterate, food, and the police of apothecaries' shops are included:) such measures as may be necessary to remedy, or materially modify, the processes by which unwholesome solid or gaseous emanations are given off in the prosecution of various trades, manufactures and occupations, so that they may be conducted with the least possible injury to the health of the public, and the operatives employed: such measures as may be necessary to ensure regular information of the exact sanitary condition of the whole of the district, as well as a perfect knowledge of the sanitary state of the inhabitants, so that no new circumstance shall arise, with regard to the salubriousness of any locality, which shall not be directly duly reported, and met accordingly, so that, a perfect system being introduced, the routine of daily labor and daily cleansing should prevent any accumulation of refuse, and render cleansing works of magnitude to meet extraordinary visitations of disease unnecessary. The very fact of such extraordinary works being demanded, being held to prove the inefficiency of the system, which had hitherto prevailed, to guard against probable, possibly inevitable contingencies.

With regard to diseased conditions themselves, the duties may be thus defined :—

To ascertain the causes of the amount and general and relative mortality of the people ; to ascertain the sanitary condition of the inhabitants themselves, apart from the mortality, and whether a high or low physical state of health prevails among all or certain classes of the people ; also the real and apparent causes to which such general or partial state of impaired health is to be attributed ; and further, to suggest practicable means of reducing an excessive mortality, and of generally improving the physical condition of the population.

To ascertain the existence of *particular* diseases which increase the ordinary rate of mortality, the causes which render such diseases prevalent, and to suggest the measures by which they may be prevented, and if necessary, to superintend the execution of these measures, so that the public may derive the full benefit which they are capable of affording.

To ascertain the existence of any habits, manners, customs, or modes of life which tend to increase either the general mortality, or the mortality of some special class of the population ; and to suggest, and if desirable to superintend, the agency by which efficient changes are to be brought about. Likewise to point out the influence which the exercise of certain trades and occupations exerts upon the health of those engaged in them, and upon their offspring.

To ascertain the existence, and to suggest means for the suppression, and where that is impracticable, the modification, of such nuisances, or local causes, as tend to foster or originate disease ; and where necessary, to superintend the execution of the measures thus suggested.

To promptly ascertain the existence of diseases, more especially those of the zymotic class ; to point out the most efficacious means for checking or preventing the spread of such diseases ; to ascertain that the measures indicated are efficiently carried out, and to suggest such general measures of relief for the parties affected, or threatened to be affected, as he may deem expedient.

To inspect all public buildings, churches, chapels poor-houses, asylums, lodging-houses, public and private schools, and public almshouses and charitable institutions, &c. ; and to point out simple yet efficient means of ensuring a supply of pure air, adequate to the wants of the inmates, and a means of exit for the vitiated air. Also to ascertain whether in such establishments there are any circumstances or conditions offensive to, or prejudicial to the health of, the occupants or inhabitants in the neighborhood.

The advantages which the community will enjoy in the appointment of an officer of health, will be that they will have a duly-qualified officer prepared to act as the efficient medium by which *all* the circumstances which affect the health of man may be duly considered and weighed ; by which they may be classified and arranged, so as to be brought under simple heads, and consequently be more easily remedied, either by voluntary efforts or by legislative enactments ; by which conditions inimical to health may, with simplicity and facility, be brought under the notice of a competent body, prepared to deal with questions affecting the health and lives of human beings, irrespective

of local control, jealousy, influence or tyranny, as applied either to himself or to the poor, who would, in general, be thereby relieved from the cruel alternative of being compelled to submit to the influence of deleterious and destructive agencies, or of being turned out of their dwellings, which, though unhealthy, are still their *homes*.

It is the right of the people at large to enjoy the elementary conditions of a natural existence. The officer of health will be authorized to act, and be recognized, as the public protector of that right. His office will bind him to support the poor against the small landlords, the greedy and indifferent, and to crush their despotism in matters affecting the health and lives of thousands upon thousands of the population; to suppress disease in its hot-beds; to protect children from scarlatina, measles, &c., men from typhus, &c., and all from premature death. His labors will tend to raise the general standard of health; to add to the working years of life, and consequently to the material wealth of the community; to improve the moral and intellectual, with the physical condition of existence; to create order out of disorder, happiness out of misery, beauty of form out of stunted growth and physical imperfection; to build up a strong and self-respecting people out of a feeble and undeservedly degraded and abandoned, yet laborious and long enduring, population. His privilege it will be to do justice to all, especially to the poor and needy, and to be the agent in the granting of a new charter of liberties, as valuable to the people at large as that enforced at Runnymede. While curative medicine,—a great and acknowledged good,—points with just pride to its wonderful individual cures, preventive medicine, a greater still, will appeal to the countless thousands saved from suffering and premature destruction by the application of its principles.

Although there exist numerous instances, in most of our towns, of the advantages conferred on the public health by the partial and limited improvements which have resulted from the application of the principles of preventive medicine, through the indefatigable agency of philanthropic medical men, yet it is impossible to point in England to any locality where preventive medicine has been applied, as an art, in an efficient manner.

Adventitious circumstances, altogether irrespective of the public good, have generally determined any great improvement in the physical condition of townsmen; and public bodies, especially public companies seeking after gain, are found quite as ready to sacrifice the public health for their private benefit, when such a course can be adopted in a quiet manner, as they are prompt to manifest regard for the public welfare in striking and readily observable works or operations which they expect to return large profits.

In the army and navy alone are to be found fair examples of what can be done by an efficient health officer to preserve the health and lives of men even when exposed to what are ordinarily considered *certain* causes of disease.

The experienced army and navy surgeons are found to a man declaring in every variety of expression the one great truth, that *preventive medicine will effect infinitely more for mankind than all the drugs which have yet been discovered, and all the curative skill which has ever been exerted for the alleviation of disease.* And wherever inter-

fering and disturbing circumstances have not operated, the results which they can exhibit show how completely their principle is borne out. They also demonstrate to us how surely grand results for human life and human happiness will yet be worked out, when the means which have been indicated are applied with energy and perseverance.

Look but to the chances of life afforded to the sailor now, as compared with former times. Seventy years ago, the deaths were 1 in 8 annually; thirty-eight years ago, they were 1 in 32; twelve years ago, they were 1 in 72. That is to say, in a quarter of a century, by efficient management, the general mortality in the navy was reduced from 3.12 to 1.39 annually in every 100 men, being a reduction of 56 per cent. in the absolute amount of deaths.

In the army the mortality has been reduced to about two per cent. at home, and four per cent. in our foreign possessions.

If one cogent fact be desired to show the saving of life which can be effected through health officers, it is found in this, that Robert Jackson,—to whom sufficient honor cannot be given as a great disciple of preventive medicine,—reduced the mortality of the troops in Jamaica from 120 per thousand to 20 per thousand.

The same average is obtainable for the population of our towns; but its speedy attainment depends on the services of those educated in the school of preventive medicine,—on men who will imitate the untiring zeal, and who, in viewing the remediable causes of disease, will take that large grasp of the subject which eminently distinguished their prototype in military life.—*Journal of Public Health*, pp. 255–259.

XII. Instructions for filling the Census Schedule. (p. 131.)

The general heading is to be filled by inserting the name of the city or town, or the number of the district, and of the county or the parish, and of the State, in which the inhabitants enumerated reside; and the date of the enumeration. Each page is to be attested by the signature of the enumerator.

1. Under heading 1, entitled "Dwelling-houses, numbered in the order of visitation," insert the number of each dwelling-house, as it is visited. The first house visited by the enumerator is to be numbered 1; the second, 2; the third, 3; and so on to the last one visited and enumerated, in the town or in his district. By a dwelling-house is meant a separate tenement, containing one or more families, under one roof. If several tenements are in one block, with walls, either of brick or wood, to divide them, and having separate entrances, they are each to be numbered as separate houses. But if not so divided they are to be numbered as one house. If a house is used partly for a store, shop, or for other purposes, and partly for a dwelling-house, it is to be numbered as a dwelling-house. A hotel, poor-house, garrison, hospital, asylum, jail, penitentiary, or any other similar institution, is to be numbered as one dwelling-house. And in the column under the number of such house, write the descriptive name, as "hotel," "poor-house," &c., as the fact may be.

2. Under heading 2, entitled "Families, numbered in the order of visitation," insert the number of each family, as it is visited. The first family visited by the enumerator is to be numbered 1; the second, 2;

and so on to the last one visited and enumerated, in the town or in his district. By the term family is meant, either one person living separately, in a house or part of a house, and providing for himself or herself; or, several persons living together, in a house or part of a house, upon one common means of support, and separately from others in similar circumstances. A widow living alone on her own separate means of support, and two hundred or more individuals living together on a common means of support provided by one head, should each be numbered as one family. The resident inmates of a hotel, jail, garrison, hospital, asylum, or other similar institution, should be numbered as one family.

3. Under heading **3**, entitled "Name of every person whose usual place of abode, on the first day of July, 1850, was in this family," insert the name of every person of every age in each family, including the names of those who were temporarily absent, as well as those at home on that day. The names are to be written, beginning with those of the father and mother, or either, if one only be living; or, if both be dead, with that of some other ostensible head of the family. Next as far as practicable, insert the name of the eldest child residing at home; then the next eldest, and so on to the youngest; then the other inmates, boarders, and lodgers; and then the laborers, domestics, and servants. Landlords, jailers, and superintendents of poor houses, garrisons, hospitals, and other similar institutions, are to be taken as heads of their establishments; and the inmates in the respective families under their care are to be enumerated accordingly. The name and description of every person who usually sleeps in a store, shop, eating-house, or other similar place, must be separately taken, if not otherwise enumerated. By "place of abode" is meant the house or usual lodging-place of the person. Any person who is temporarily absent on a visit, journey, or voyage, or for other purposes, without taking up his place of residence elsewhere, and with an intention of returning again, is to be considered as a member of the family about to be enumerated. Students in colleges, academies and schools, are to be enumerated, not as members of such institutions, but as of the family to which they belong. The name of every person who may have died since the first day of July, is to be entered and described as if living; but the name of no person born since the first day of July is to be taken. Indians not taxed are not to be enumerated in this schedule; though they ought to be taken separately.

The above rules apply to those employed in navigation. Inquiries are to be made at every dwelling-house, or of the head of every family, and on board every ship in port, or of the commander of such ship; and every one who hails from such family, or from such ship, and considers it his home or usual place of abode, whether present in port, or temporarily absent on a voyage, and those only, are to be enumerated. Neither persons on board vessels of war of the United States, nor those whose only habitation is the foreign or other vessel to which they belong, which happens to be in port; nor those who are temporary boarders for a few nights at a sailor boarding-house or lodging-house, (like travellers at a hotel,) if they are inhabitants of other places, are to be enumerated. Such persons are not *in*habitants, and cannot properly be enumerated with the population of a place. This

rule will not, however, apply to the crew of a United States' revenue cutter, or other similar vessel, which belongs to a particular port. These should be taken as of such port. A similar rule will apply to those employed in the navigation of the lakes, rivers, and canals. Each one is to be taken at his home or usual place of abode, whether present or temporarily absent; and, if any one lives on board a vessel or boat, who is not so enumerated, he is to be taken as of the place where the vessel is owned, licensed or registered. And the enumerator is to make inquiry on board every vessel and boat employed in the internal navigation of the United States, and of the owners at the places where licensed, and enumerate those only who come within the above rules.

After all the names are inserted, the enumerator is to read and count them, and say: "I have the names of ten persons" (or other number as the fact may be,) and ask, "Are these all the persons in this family? Is there no other person in it?" After the name of each of the persons is inserted, the enumerator will proceed to fill up such description of each as is designed to be obtained, according to the following headings:[1]

4. Under heading 4, entitled "Age," insert, in figures, opposite the name of each person, the specific age of such person. The age, exact or estimated, of every one, is to be inserted; and if the exact age cannot be ascertained, insert a number which shall be the most practicable approximation to it. If the person be a child under one year old, the entry is to be made in fractional parts of a year; as, for one month, $\frac{1}{12}$; for two months, $\frac{2}{12}$; for three months, $\frac{3}{12}$; and so on to eleven months, $\frac{11}{12}$.

5. Under heading 5, entitled "Sex," insert, in all cases, opposite each name, the letter M for male, or F for female, as the case may be.

6. Under heading 6, entitled "Color," if the person is white, leave the space blank; if black, insert the letter B; and if mulatto, insert M.

7. Under heading 7, entitled "Married," insert a mark thus — opposite the name of each married person, male or female. Leave the space blank opposite the name of every other person.

8. Under heading 8, entitled "Widowed," insert a mark thus — opposite the name of each person, male or female, who has been married, but is widowed. Leave the space blank opposite the name of every other person.

9. Under heading 9, entitled "Profession, Occupation, or trade of each male person over fifteen years of age," insert, opposite the name of each male person over fifteen years of age, the name of the specific profession, occupation, or trade, which the person is known and reputed to follow, in the place where he resides; as, clergyman, physician, lawyer, shoemaker, student, farmer, carpenter, laborer, sailor, or other-

[1] In making enumerations of the inhabitants of different places, it is sometimes difficult to decide *who are inhabitants;* and mistakes, especially in regard to seamen, have been made, because no uniform rule has been followed. In England, the enumeration throughout the whole kingdom has been made in one day; and the name of every person who slept in a house the previous night, has been taken as an inhabitant of such house. If this plan could be adopted by us, and the name of every person throughout the whole State, or the whole nation, could be taken in one day, mistakes might, perhaps, be avoided. The rule above given, if understood and properly regarded in practice, will, perhaps, secure as much accuracy as can otherwise be attained.—[See books referred to, page 128.]

wise, as the fact may be. If a person follows several professions or occupations, the name of the principal one only is to be inserted. The space opposite every other name is to be left blank. Clergymen and physicians, of different denominations, may be distinguished by inserting the initials of the denomination to which they belong; as, B. for Baptist; R. C. for Roman Catholic, &c.; and H. for Homeopathic; B. for Botanic, &c.

10. Under heading 10, entitled "Owners of real estate," insert a mark thus — opposite the name of every person, male or female, who is reputed to own real estate in any part of the United States. The space opposite every other name is to be left blank.

11. Under the title "Place of Birth," and heading 11, and sub-title "Born in the town where each resides," insert a mark thus — opposite the name of each native of the town or city; and leave the space blank opposite every other name.

12. Under column 12, and sub-title "In what other state, territory, or country born," insert the name, or an abbreviation, of the state or territory where born, if within the United States; or the name of the government or country, if without the United States. If the place of birth is unknown leave that space blank.

13. Under heading 13, entitled "At school during last year," insert a mark thus — against each person, male or female, who has attended a school where reading and writing are taught, a part or the whole of the period. Sunday schools are not to be included. The space against every other name is to be left blank.

14. Under heading 14, entitled "Persons over twenty years of age, who cannot read and write," insert a mark thus — against each of such persons, and leave the space blank against every other name. If a person can read and write a foreign language he is to have no mark against his name.

15. Under heading 15, entitled "Whether deaf and dumb, blind, insane, idiotic, pauper or convict," insert opposite the name of each of such persons who may be in the family, the words, "Deaf and dumb," "blind," "insane," &c., as the fact may be; and leave the space blank against every other name. The question to be asked may be: Is there any person in this family deaf and dumb? blind? &c.; if so, which one?

Whoever attempts to enumerate the inhabitants of a place, or to "take a census," should be qualified for the employment. He should be honest, intelligent, methodical in his habits, a plain and rapid writer, gentlemanly and conciliatory in his manners, and capable of adapting himself to the different kinds of persons whom he meets. He should understand statistical science, and know what information to obtain, and the best, most simple, and most satisfactory way to obtain it. It has been well said,—"A fool can ask questions, but only a wise man pertinent ones; and it often takes a wiser man to ask than to answer." To some men information will be fully and freely given; from others withheld; and in both cases by the same person. In the one case the questions are clear and simple, and put in such a manner as not to excite distrust and wound local interests and personal susceptibilities, but so as to inspire confidence and good will; in the other, the improper mode of eliciting the information will excite opposition to the

inquirer, and be likely to prevent fulness and accuracy. The mode of approach, and the questions asked, to obtain the same information, may be varied and adapted to the circumstances of different cases. And discretion will be a qualification ever to be possessed by the enumerator.

XIII. Communication from William C. Bond, Esq. [*See p.* 149.]

Observatory, Cambridge, Nov. 30th, 1849.

My Dear Sir,—Herewith I return you, with my thanks for its perusal, the pamphlet on "Meteorology as connected with the Public Health in England." By James Glaisher, Esq., Superintendent of the Magnetical and Meteorological Observations made at the Royal Observatory, Greenwich.

Since our conversation on the subject in July last, I have brought it up before several of my friends who take an interest in such matters, and I have found them unanimously of the opinion, that if our Legislature should see fit to encourage similar meteorological investigations within our own Commonwealth, much valuable information in regard to the laws which govern our atmospheric changes might reasonably be expected to result from them.

But it is absolutely necessary that the observations upon which such investigations are to be based, should be conducted upon a uniform, well-digested system, continued through a series of years, and finally be put into the hands of a competent person for careful combination, comparison and discussion.

In reply to your inquiries respecting the instruments and kind of observations which would suffice to render useful such establishments as those referred to in the English report, I need only be very brief, as in the event of the Legislature adopting the proposed plan, some person familiar with these matters will doubtless be appointed to superintend the work.

The apparatus required for a meteorological station need not be very expensive. It will be sufficient that each observer be furnished with a good barometer, a standard thermometer, two wet bulb thermometers, a rain gauge and a wind vane. To these should be added blank forms for registering his observations.

The barometer should be graduated to English inches, and decimal parts, reading by vernier to one five hundredth part of an inch.

The English division is preferred, because nearly all the instruments of this sort in this country are so graduated, and it would afford a more ready comparison of observations with others. There is no important advantage to be derived from a change in this respect, while on the other hand, a variety in graduation creates confusion.

It will be advisable to have all the barometers so constructed that the quicksilver at the lower surface may be easily adjusted at every observation to a constant distance from the zero of the scale. The attached thermometer may have its bulb inserted in the cistern; or it may be placed in contact with the glass cylinder containing the column of mercury, near the base.

Great care must be taken to have the standard thermometers accurately graduated. The wet bulb thermometers, which are to be used as psychrometers for ascertaining the dew point or hygrometric condi-

tion of the atmosphere, are to be compared in their dry state with the standard, and any difference noted in the journal. A cubical box of zinc, ten inches by the side and open at top, with an interior flange, answers the purpose of a rain gauge, presenting a surface of one hundred square inches; the amount of rain fallen is readily ascertained by either weighing or measuring.

The wind vane should be well balanced, not too light, and the cardinal points, indicating the direction, set to correspond to the heavens; or the north point of the horizon in this State may be taken for the present at 9° 30′ east of that indicated by the magnetic compass.

It is of the first importance that all the observers should adopt one uniform system in respect to time, mode of observing, and nomenclature. The journals will then speak a common language, which will greatly facilitate the labor of reduction, comparison and discussion.

No other than general instructions need here be given for the arrangement of the instruments, as probably at no two stations can they be precisely similarly situated. The barometer ought not to be subjected to great and frequent changes of temperature; the ordinary sitting room, where an equable temperature is usually maintained, is both a convenient and proper situation for it.

The external standard thermometer should be placed on the north side of the house, on a bracket not less than six inches from the walls, so as to allow a free circulation of air round it; and it should be carefully guarded from radiation from other buildings or from the open ground; every particular regarding the situation and condition of the instruments should be carefully recorded in the journal.

It would add greatly to the interest and value of the work if each observer should, from time to time, make note of any natural events that may occur under his own eye, such as the time of flowering of plants, the temperature of springs, and of deep wells; every appearance of the aurora borealis, particular notice of thunder storms and of meteors, the time when they are first seen, the magnitude, duration and apparent path. In fact so much interesting and valuable information would result from the establishment and faithful conduct of such stations, and at a very trifling cost, that I cannot but hope our Legislature will give the subject a serious consideration.

In regard to the hours proper for regular observation, much must be conceded to the convenience of those who undertake the task, as I understand they will be expected to give their time without any other remuneration than the consciousness of aiding in a good work. Surely the Legislature would be justified in granting something additional, where the result of the labor is likely to benefit the whole community.

The hours adopted at this place for meteorological observation, are sunrise, 9 a. m., and 3 and 9 p. m. Sunrise we consider an important point, and it is usually the period of greatest cold; 9 p. m. is near the mean temperature of the twenty-four hours. The hours of maximum and minimum barometer would probably be found inconvenient to many. You will not, I suppose, be able to obtain more than three daily observations steadily continued; it would be well that two of these should correspond to the hours adopted at fixed observatories. This point ought to be settled definitely, and, once decided upon, should be strictly adhered to through the whole series.

In regard to the distribution of the stations, Newburyport, Boston, (or Cambridge,) Plymouth, Provincetown, and Nantucket, for the sea coast—Worcester, Amherst, Princeton, Northampton and Williamstown, in the interior, seem to me to be favorably situated for watching the progress of storms.

These are the principal points which occur to me at this moment, as needful to be attended to.

Respectfully and truly yours,

W. C. BOND.

To Lemuel Shattuck, Esq.

XIV. Extracts from the Report of the Registrar General.

[*See page* 149.]

The publication to which Mr. Bond refers contains weekly, monthly, and quarterly abstracts of the atmospheric observations made at the Royal Observatory, or compiled from those made at other places in England. The tables contain admirable formula for such observations, and should be carefully studied before adopting a plan for Massachusetts. They are, however, here omitted. We subjoin extracts from the "Remarks on the weather during the quarter ending September 30, 1848," and for the week ending July 28, 1849, which accompany the tables, as an illustration of the manner in which this part of these reports is prepared:—

With the exception of a few days in July, and the period between the 9th and 23d of September, the weather during the quarter ending September 30, 1848, was wet, with very little sunshine. The month of August was extremely wet, and in many places the falls of rain, both in July and September, were unusually great. So much rain falling in a period immediately following the previous bad weather, renders the season and the year very remarkable. On July 1, the mean temperature of the air was 8°4 below the average value of the same day in the seven preceding years, and on the 6th it was 12°2 in excess above the average; on the former day the mean temperature was 46°7, and on the latter day it was 74°0. On the 9th, it was 3° below the average, and on the 14th it was 9°4 above the average; and on the 15th it was again below the average. These changes were great and abrupt. From July 11 to September 19th the temperature of the air was almost always below the average value, and particularly so between the 11th and 15th of September; on the 12th, the departure from the average was 12°6. From the 20th of September to the end of the quarter the temperature of the air ranged somewhat above the average value. The hottest day in this year was July 6, and this day was the hottest all over the country. On an average of seven years the hottest day is July 5.

In pursuance of the arrangement hitherto followed, I will speak of each subject of investigation separately.

The Mean Temperature of the Air at Greenwich

For the month of July was 61°5, which is 3°7, 1°3, 0°6, 0°1, and 1°7 *above* those of the years 1841 to 1845 respectively, 3°0 and 3°9

below those of the years 1846 and 1847; or it is 0°1 *above* the average of these seven years.

For the month of August was 58°5, which is 2°0, 6°9, 3°6, 4°7, and 3°6 *below* those of the years 1841, 1842, 1843, 1846 and 1847, respectively, 0°8 and 1°2 *above* those of the years 1844 and 1845, respectively, or it is 2°7 *below* the average of these seven years.

For the month of September was 55°8, which is 2°3, 0°6, 3°7, 1°1, and 4°3 *below* those of the years 1841, 1842, 1843, 1844 and 1847, respectively, 1°2 and 1°5 *above* those of the years 1845 and 1846 respectively, or it is 1°2 *below* the average of these seven years.

The mean value for the quarter was 58°6; that for 1841 was 58°8; for 1842 was 60°7; for 1843 was 60°8; for 1844 was 58°7; for 1845 was 56°9; for 1846 was 62°6; and for 1847 was 60°3; so that the defect for this quarter *below* the corresponding quarter in the years 1841, 1842, 1843, 1844, 1846 and 1847, was 0°2, 2°1, 2°2, 0°1, 4°0 and 1°7 respectively; the only year between 1841 and 1847, whose mean temperature for this period was *less* than that for the present year, was 1845; and the difference is 1°7. The average value for this quarter from the seven preceding years was 59°8, so that the mean temperature of the air for the quarter ending September 30, 1848, was *below* that of the corresponding quarter in the preceding seven years by 1°2.

The Mean Temperature of Evaporation at Greenwich

For the month of July was 57°6, which is 0°1 *above* that for the preceding seven years.

For the month of August was 55°2, which is 2°9 *below* that for the preceding seven years.

For the month of September was 53°2, which is 1°5 *below* that for the preceding seven years.

The mean value for the quarter was 55°3, which is 1°4 *below* the average for the seven preceding years.

The Mean Temperature of the Dew Point at Greenwich

For the month of April was 54°6, which is 3°0, 1°4, 0°2, 1°9, and 1°8 *below* those for the years 1841, 1842, 1845, 1846 and 1847, respectively; 1°7 and 0°1 *above* those for the years 1843 and 1844 respectively, or it is 0°9 *above* the average of these seven years.

For the month of August was 52°8, which is 2°2, 6°1, 5°0, 4°7, and 3°3 *below* those for the years 1841, 1842, 1843, 1846 and 1847, respectively, 0°5 and 0°2 *above* those for the years 1844 and 1845, or it is 2°9 *below* the average for these seven years.

For the month of September was 50°9, which is 2°8, 2°6, 4°0, 2°3, and 4°0 *below* those for the years 1841, 1842, 1843, 1844 and 1846, respectively, 1°2 *above* those of the years 1845 and 1847, or it is 1°9 *below* the average of these seven years.

The mean value for the quarter was 52°8, which is 1°3 *below* the average for the corresponding period of the preceding seven years.

The mean weight of water in a cubic foot of air for the quarter was 4.5 grains, which is 0.2 less than the average for the seven preceding years.

The additional weight of water required to saturate a cubic foot of air was 1.1 grain. The average value for the seven preceding years was 1.0 grain.

The mean degree of humidity of the atmosphere for July was 0.762, for August was 0.797, and for September was 0.795. The averages for the seven preceding years were 0.780, 0.804, and 0.842 respectively. The value for the quarter was 0.785, which is 0.024 *less* than the average for these years.

The mean elastic force of vapor for the quarter was 0.411 inch, which is 0.026 *less* than the average for these years.

The mean reading of the barometer at Greenwich for July was 29.836 inches, for August was 29.732 inches, and for September was 29.832 inches; these values are 0.041 inch *above*, 0.065 inch *below*, and 0.021 inch *above*, respectively, the averages for the seven preceding years. The mean value for the quarter was 29.797 inches, which is of the same value as the average for the seven preceding years.

The average weight of a cubic foot of air under the average temperature, humidity and pressure, was 527 grains; the average for the seven preceding years was 526 grains.

The *rain* fallen at Greenwich in July was 2.1 inches, in August was 4.6 inches, and in September was 2.4 inches. The average amount for the seven preceding years was 2.3 inches in July, 2.7 inches in August, and 2.2 inches in September. The amount fallen in the quarter was 9.1 inches, which is 1.9 inches greater than the average for the seven preceding years. The average fall of rain during this quarter, as derived from the observations since the year 1815, is seven inches. In the year 1824 the fall of rain in the quarter ending September 30 was 9 inches; in 1828 it was 12.5 inches; in 1829 it was 11 inches; and in 1839 it was 10.5 inches. The total amount of rain fallen this year till September 30 was 24.3 inches; in 1841 it was 21.2 inches; in 1842 it was 14.2 inches; in 1843 it was 17.5 inches; in 1844 it was 16.2 inches; in 1845 it was 16.6 inches; in 1846 it was 17.5 inches; and in 1847 it was 11.6 inches; so that the fall of rain this year exceeds that in 1841 by 2.7 inches, in 1842 by 9.7 inches, in 1843 by 6.4 inches, in 1844 by 7.7 inches, in 1845 by 7.3 inches, in 1846 by 6.4 inches, and in 1847 by 12.3 inches. The *excess* of the fall of rain this year over the average for the seven preceding years is 7.5 inches.

In the years 1824 and 1828 the depth of rain fallen to the end of September exceeded 23 inches; and in the years 1829 and 1839, the amount collected exceeded 20 inches. So large a fall as 24.3 inches within the first nine months of the year has probably not been exceeded within this century.

The temperature of the water of the Thames was 63°0 by day, and 62° by night. The water, on an average was 3°9 *warmer* than the air.

The horizontal movement of the air was about 130 miles daily; during the period of time between July 19 and July 27, it amounted to 233 miles per day; from July 31 to August 6, its average daily value was 240 miles, and on August 21 it exceeded 300 miles.

The highest and lowest readings of the thermometer in air, at the height of four feet above the ground, and protected as much as possible from the effects of radiation and rain, were 85°3 and 32°8.

The average daily ranges of the readings of the thermometer in air, at the height of four feet, were 22°5 in July, 18°5 in August, and 20°9 in September. The average ranges for these months, from the obser-

vations of the seven preceding years, were 17°2, 17°1, and 16°2 respectively.

In July, the *readings of the thermometer on grass* were 29°5 on one night, between 32° and 40° on 9 nights, between 40° and 50° on 12 nights, and above 50° on 9 nights. In August the lowest reading was 36° ; and the readings were below 40° on 4 nights, between 40° and 50° on 18 nights, and above 50° on 9 nights. In September, the readings were below 32° on 9 nights, and the lowest was 23° ; they were between 32° and 40° on 7 nights, between 40° and 50° on 9 nights, and above 50° on 4 nights.

The observer, at Uckfield, says,—"That there was a severe white frost on the morning of August 10, with ice on the brooks and low grounds."

The mean amount of cloud for July was 6.6, for August was 7.6, and for September was 5.6. The average values for the seven preceding years were 6.7, 6,3, and 6.0 respectively.

There were five exhibitions of the *Aurora Borealis* during the Quarter, which occurred on July 11, August 28, September 4, 8, and 18.

Thunder Storms at different parts of the country occurred on July 14, 26, August 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 22, 23, 31, and September 5 ; and lightning, unaccompanied by thunder, was seen on July 24, August 23, 24, 25, September 22 and 25. The storms of July 14 were observed at Greenwich, Latimer Rectory, Cardington, Saffron Walden, and Leicester. At Greenwich, thunder clouds were observed first in the W. and N. W., at $8^h.\ 30^m.$ P. M., and from this time till near midnight the thunder followed the lightning at intervals varying from $5^s.$ to $40^s.$, and lightning was visible during the whole of the night. At Latimer the storm is described as awful, and of five hours' duration. On July 24 lightning was seen at Saffron Walden ; on July 26 there was a thunder storm at Leicester ; on August 1, thunder was heard at Greenwich during the afternoon ; on August 3 and 4, at Saffron Walden ; on August 5, there were thunder storms at Greenwich, Stone, Saffron Walden, Leicester, and Empingham—near the last-mentioned place a tree was struck by the lightning. On August 6 and 7 there were thunder storms at Leicester ; on August 8, at Leicester and at Exeter ; on August 9, at Greenwich, but no lightning was seen ; on August 10 at Stone ; on August 11 at Greenwich, between the hours of 6 P. M. and 8 P. M., the storm began in the E., and many of the flashes of lightning were vivid and preceded the thunder by two or three seconds only ; on August 22 there were storms at Exeter, Hastings, Stone, Saffron Walden, Cardington, and at Leicester. At Greenwich, on August 23 and 24, between the hours of 8 P. M. and midnight, on both days, many flashes of lightning were seen. On August 31, at Greenwich and at Stone, there were thunder storms ; at the former place the thunder followed the lightning at intervals varying from $1^s.$ to $12^s.$ On September 5, there were storms at Greenwich, Stone, and Leicester. On September 22 lightning was seen at Greenwich and at Stone, and again at Stone on the 25th.

Hail fell at Stone and Cardington on August 22, and at Empingham on August 5 ; the hailstones at Cardington were of very large dimensions.

Gales of Wind took place all over the country on August 20, 21,

and 22, but more particularly on the 21st; at many places trees were blown down and a great deal of injury was done; coasting vessels and fishing boats generally suffered very much.

Large and continuous falls of Rain.—In July, at Greenwich, rain fell to the depth of 0.3 inch on the 15th, 23d, and 31st. On the 14th, at Latimer Rectory, rain to the depth of half an inch fell in half an hour. In August, rain was falling more or less at every part of the country on every day. At Greenwich, the amount collected exceeded 0.3 inch on the 1st, 3d, 8th, 10th, and 21st; and the falls exceeded 0.7 inch on the 14th and 31st. On the 14th a large fall occurred at all places. In September, on the 24th at Thwaite, between 4^h. A. M. and 9^h. A. M., rain fell to the depth of 2.12 inches, a greater fall within the same interval of time than has occurred at Thwaite within the preceding 40 years; and on this day at Leeds, the fall within nine hours was 2 inches. On the 28th, 29th, and 30th days, rain was falling almost continuously over all parts of the country. At Cardington the fall within 60 hours was 2.6 inches. At Leicester, the amount within 72 hours was 2.25 inches, and this was the amount which fell on these days at most places. This fall, extending over so large a portion of the country, is most unusual.

The approximate mean monthly values of the several subjects of research are shown in the subjoined tables; but, as they have not been corrected for diurnal variation corresponding to the time or times at which the observations have been made, the values generally are not in a state for comparison with each other. This remark does not apply to the approximate mean monthly temperatures of the air, because the same correction is applicable at all places.

The mean monthly temperatures of the places in Cornwall and Devonshire, in these three months, are about the same values as those of other places, but the extremes of daily and monthly temperatures are much less than elsewhere.

The reading of the barometer was low at the beginning of July, being 29.403 inches at 6^h. A. M. on the 1st; this reading increased to 29.740 by 6^h. P. M. on the 2nd, decreased to 29.611 on the 3d, and increased quickly on the 4th, and reached 30 inches before midnight on this day. The reading ranged above 30 inches on the 5th, and decreased to 29.635 by midnight on the 9th. During the 10th, the value increased 0.539 inch, having passed the point 30 inches, at about 1^h P. M. on this day. The reading continued above 30 inches till the 17th, the highest value was 30.344 on the 12th. From the 17th there was a gradual decrease to 29.146 on the 20th, at 3^h. P. M.; at midnight on this day the reading was 29.467, and increased to 29.781 on the 24th; during the 25th the decrease was 0.3 inch; the reading at midnight was 29.480; it then gradually increased to 30 inches by the 29th. On the 30th the change was considerable, amounting to nearly half an inch during the day, and at the end of the month the reading was 29.313 inches and still decreasing. On August 1, at 6^h. A. M. the reading was 29.244 inches; after this time it turned to increase, and was 29.581 at midnight, and reached 29.817 on the 2nd day. On the 3d it decreased, and was 29.582 at midnight; during the 4th the changes were small; on the 5th the decrease was 0.190 inch, and the reading at midnight was 29.335 inches. During the 6th and 7th there

was a slight increase; from this time to the 20th the changes were small, and at midnight on the 20th the reading was 29.846 inches. The decrease on the 21st was 0.334 inch, and at noon on the 22nd the reading was 29.423 inches, when it turned to increase and was 29.528 at midnight; the increase continued till the 25th at 0^h., the reading at this time being 29.947, when it turned to decrease, and the changes after this time to the end of the month were small. In September, till the 4th the reading was above 30 inches; during the 5th, it decreased 0.2 inch, and was 29.638 at midnight; from the 6th to the 9th the changes were small; on the 10th, by 6^h. P. M., the reading decreased 0.219 inch, and the reading was 29.496 inches, it then turned to increase quickly; on the 11th the reading at midnight was 30.091 inches. From this time till the 18th the reading was always above 30 inches, the highest value was 30.345 on the 16th; on the 19th it began to decrease, and on the 24th the reading was 29.223 inches, and from this time to the end of the month the changes were small, and chiefly about the mean reading of 29.6 inches.

The reading of the barometer at Stone, till the 20th, was not very fluctuating. On July 21st, at 9^h. A. M., the reading was 29.424 inches; it gradually increased till the 24th, and was 29.681 inches at 9^h. P. M., it then turned to decrease; the reading on the 25th at 9^h. A. M. was 29.476. On the 26th, at 9^h. P. M., it was 29.459, and then turned to increase till the 28th at 9^h. P. M., when its reading was 29.880. On the 30th, at 9^h. A. M., the reading was 29.730, and at 9^h. P. M., on the same day, it was 29.247 inches. On August 1, the reading was 29.133 at 9^h. A. M.; this value increased to 29.732 inches by August 2 at 9^h. P. M., it then turned to decrease and was 29.200 on the 5th at 9^h. P. M.; from this time till the end of the month the changes were small. On September 1st, at 9^h. A. M., the reading was 29.968 inches; on the 3d, at 9^h. A. M., it was 30.156; on the 5th, at 9^h. A. M., it was 29.558; on the 7th, at 9^h. A. M., 29.840; on the 10th, at 3^h. P. M., it was 29.408; on the 16th, at 9^h. A. M., it was 30.210; on the 20th, at 9^h. A. M., it was 29.490; on the 21st, at 9^h. A. M., it was 29.588; on the 24th, at 3^h. P. M., it was 29.100; on the 27th, at 9^h. A. M., it was 29.482, and the changes after this time were small.

The great prevalence of rain during the quarter, together with the very short periods of sunshine, has harassed the farmer in gathering in the crops. The month of July was about its usual character, but the constant rain in August impeded the farmer in his operations, and in many of the southern counties injured the crops considerably, causing the corn to sprout, and seed leaves to appear of fully an inch in length by the middle of August; the greater coldness of the northern counties prevented the sprouting of the corn, but it otherwise was seriously injured. Between the 9th and the 23d of September the weather was generally fine, and this period was the only good interval of time for harvest work during the quarter, and the wheat gathered within this time was in good condition. The heavy falls of rain at the end of this month flooded many parts of the country, and the roads in some places were deeply trenched.

The observer, at Whitehaven, says—"The harvest in this neighborhood was completed by September 20, somewhat earlier than usual; the crops were abundant and secured in excellent condition."

The observer, at Leeds, says—"The harvest has been most protracted, and there is yet much both of barley and oats out in the fields, which I fear is seriously injured. There is in fact much more corn out in the northern districts than is generally supposed. On September 25, I observed in the East Riding of Yorkshire hundreds of acres of corn and potatoes, with water to the depth of a foot upon them. The wheat and barley, which were housed between the 9th and the 23d of September, was without damage and in good condition; that which was housed before this time was in a bad state from not being dry. Wheat in this neighborhood has not sprouted generally. Wheat and barley yield badly, and both crops are under an average. Both oats and beans are average crops. Potatoes are getting worse, the winter or late varieties of this vegetable are now attacked and rotting very fast; *wherever the tops have been very luxuriant they are the worst.* I have observed that the disease, which I have no doubt is attributable to meteorological causes, seems to have been immediately preceded by a white frost."

Sheep stock has not been healthy; the deaths among the lambs have been very numerous even in the driest districts.

Samuel Charles Whitbread, Esq., says—"My harvest began on the 28th of July; it continued 42 days, and rain fell on 28 of these days, depositing 4.75 inches of water; on the whole the crops suffered no damage." This remark has reference to the crops in Bedfordshire.

The observer, at Stone, says—"Speaking of the crops in the Vale of Aylesbury, those of hay and clover were abundant and good, but were not well gathered; wheat was below an average of many years, but was well housed; both barley and oats were average crops, and they were well housed." The observer speaks of the potato crop as being generally bad.

The observer at Southampton has kindly procured me an Agricultural Report from John Clark, Esq., of Finsbury Farm, near Romsey, Hampshire, which I have condensed as follows:—

"The South Hampshire farmer has been subjected, during the past quarter, to more trying dispensations of Providence than I have known within a period of 25 years' practice." This gentleman further observes, "that the almost constant wet weather has injured every kind of crop, and that but little has come to maturity. The occasional short periods of sunshine have frequently induced the hope that a season would come for haymaking and harvest work, but the expectation unfortunately has never been realized. A large quantity of hay has been consequently rendered useless, and turnips have been very much injured. The wide range of prices of new wheat affords the best evidence of the extent to which this crop has been harassed. On lands which have been well farmed and well drained, or on those which would readily part with an excess of moisture, the crops are an average (with the exception of potatoes, which are almost a failure.) On heavy, cold soils the crops are below the average. In consequence of the exceeding wetness, cattle have done badly."

The recent heavy rains (now October 6) excite fresh anxiety with respect to seed time. On wet lands a great deal is needed to be done to prepare them for sowing, which operation must be late, and, there-

fore, to a certain extent, more precarious than if performed under the more favorable circumstances of a good seed season.

The observer at Leeds says—"that in April the diseases in the lungs affecting cattle and sheep was extremely frequent and generally fatal.[1] In May, notwithstanding the great heat during the days, the almost nightly occurrence of white frosts checked the growing vegetation greatly; the disease among cattle and sheep was in a great measure stopped. In June, with the return of wet and cold weather, the disease among cattle again appeared; so fatal a season to milch cows has not occurred within my remembrance in this neighborhood. The potato crop is free from disease, and it is so abundant that I have never known this vegetable so cheap before at this season."

For the quarter ending December 31, 1848, he says—"The continued fall of rain in September completely destroyed the crops of corn in backward situations, and large quantities of barley, oats, and beans, in the straw, have been carried into the yards, for the cattle and pigs, as not worth the expense of threshing.

The disease among potatoes has not been found so destructive as was anticipated, and will be more injurious to the grower than to the consumer. In some situations the crops were totally and in others partially destroyed. Yet from the great extra breadth planted with this vegetable last spring there will, perhaps, be no great scarcity felt. I was most surprised by seeing field potatoes taken up as late as the 18th December. The crops of corn now thrashing are very deficient, both in quantity and quality. Turnips are an indifferent crop, and do not bear much eating; the sheep folded upon them have been prevented from doing well by the wetness of the weather; symptoms of rot are apparent among many flocks of sheep.

From the open weather the grass land has been full of meat, and has kept cattle out of the straw yards longer than usual. The disease on the lungs of beasts and milch cows, has been prevalent, and exceedingly fatal; the mortality is calculated to have been 95 per cent. of those attacked.

Within the last few weeks the epidemic prevalent in the years 1839 and 1840, has appeared among lean stock; its symptoms are blisters on the tongue and lameness. It is not often fatal but reduces the cattle attacked by it very much.

Employment for agricultural laborers is scarce, and its ill effects are much aggravated by the great numbers of men who have been discharged from the railways, whose intemperate and vicious habits tend greatly to demoralize the agricultural districts.

Many of the low grounds have been flooded and farming operations prevented in consequence."

[1] The Commission have omitted to mention, in the body of their report, the advantages which this measure would confer upon agriculturists, in the discovery and removal of the *Epizootes*, or diseases among cattle and other domestic animals. The observations here proposed to be made might lead to very important and valuable results in this department of the inquiry and application. A connection is supposed to exist between the causes which affect the health of vegetables, domestic animals, and man. Whether the atmospheric, local, or other causes which produce the potato disease, or some disease in domestic or other animals, will produce a disease in man, is an interesting question as yet undecided, but which the proposed observations might decide. This is an additional reason for the approval and adoption of this measure.

Extract from Observations taken at the Royal Observatory, Greenwich, during the week ending Saturday, 28th July, 1849.

DAY.	ELECTRICITY.	GENERAL REMARKS.
Sun.	Nothing was shown at any examination.	The amount of cloud was variable till near noon, and the sky was overcast during the remainder of the day; cumuli, cirrostratus, and scud.
Mon.	Nothing was shown throughout the day.	The sky was overcast till 5h. p. m., and generally clear afterwards. Cirrostratus and scud. Frequent and heavy showers of rain fell during the day.
Tues.	Positive, and then suddenly changed to negative, with strong tension during the time rain was falling.	The sky was covered with tumuli, cumulostrati, cirrostratus and scud till noon, and the amount of cloud was very variable during the remainder of the day.
Wed.	Negative, with strong tension during time rain was falling.	The sky was generally about three fourths covered with cumuli and scud throughout the day; frequent and heavy showers of rain fell.
Thurs.	From 1h. till 3h. 30m. p. m. strongly positive, and at other times strongly negative, with frequent constant volleys of sparks and galvanic currents.	The sky was, with slight exceptions, covered with cumuli, cirrostrati and scud till 6h. p. m., and about one half covered afterwards. From 1h. till 4h. p. m., a violent thunder storm occurred, chiefly situated at the N.; the flashes of lightning were vivid and in quick succession, followed by loud thunder at intervals of 15 to 20 seconds generally. Rain was falling heavily during the storm.
Frid.	Nothing was shown at the time the instruments were examined.	The sky was for the most part covered till 10h. p. m. and clear afterwards; cumulostrati and scud; a shower of rain fell at noon and another at 9h. p. m.
Sat.	Positive and weak at different times in the day.	The sky was mostly free from cloud till near noon, three fourths covered till 9h. p. m., and overcast afterwards; cirrostratus and scud.

XV. Registration and Classification of the Causes of Death.

Under our XVIth recommendation (p. 149,) we have spoken of the importance and necessity of a uniform nomenclature of the causes of disease and causes of death. If diseases, or groups of diseases, are to be usefully compared together, it is indispensable that the same name should be given to the same disease, and that the same diseases should be assigned to the same group or class in each place compared. Registration and classification, then, are both of great importance in any plan for a sanitary survey. Should the subjoined rules be observed by public officers, medical men and others, in carrying the sanitary laws into effect, many of the imperfections at present existing, in regard to these matters, would be obviated. For a detailed explanation of the principles on which these rules are founded, we refer to the Fourth Report of the Registrar General of England, pp. 144–216; and to his Seventh Report, pp. 249–329.

Registration. The following rules should be observed in giving names to the causes of death, to be entered in the registers:—

1. *Give such names to the causes of death as afford an exact and clear definition of such causes; and as have the same uniform meaning at all times and in all places.*

Several different terms have, in some instances, been given to the same disease, and each of these terms has been given to several dif-

ferent diseases. Vague and inconvenient names have been employed, and complications have been registered instead of the primary disease. Such are the terms "fits," "infantile disease," "inflammation," "decline," "sudden death," &c., which are improper without specifying what kind of fits, what infantile disease, what inflammation, the cause of the decline, or of the sudden death. So is consumption, cancer, or other name improper, if the death was not clearly produced by such cause. The same name should also, as far as practicable, be uniformly used for the same disease, in every section of the United States.

2. *Give a preference to a single word, or the least possible number of words, which affords this clear definition. A popular name is to be preferred; but if no popular name in a single word can be found, a technical or scientific term may be used.*

According to this rule *consumption* is to be preferred to phthisis pulmonalis; *croup* to cynanche trachealis; *pneumonia* to inflammation of the lungs; *enteritis* to inflammation of the internal membrane of the bowels; &c. By uniform use the people will soon become familiar with scientific terms.

3. *If more than one disease or cause has concurred in producing the death, the names of the different diseases or causes may be written under each other in separate words, and in the order of their appearance.*

In such cases write the causes of death in the order of their appearance, and not in the presumed order of their importance. Example—

Primary disease,—Measles.
Secondary disease—Pneumonia.

4. *Enter, in figures, as nearly as can be ascertained, the duration of the disease, in years, months, days, or hours; and if more than one disease has concurred in producing the death, make the same entries concerning each disease.*

Such entries would supersede the use of the words "chronic," "acute," "sudden," &c., which are inexact, indefinite and unmeaning terms. The duration of the disease or diseases, in these returns, will always be considered to imply the time intervening between the first appearance of well-marked characteristic symptoms in each, and the death. The following are examples of cases where more than one disease concurred to produce death:—Measles (21 *days*), Pneumonia (7 *days*), means that the first evident symptoms of measles appeared 21 days before death; and the first evident symptoms of Pneumonia 7 days before death. So diarrhœa (2 *days*), cholera (12 *hours*), means that the first premonitory symptoms of diarrhœa appeared 2 days before death, and the first evident symptoms of cholera 12 hours before death; and scarlatina (4 *weeks*), dropsy (5 *days*), angina (2 *days*), means that scarlatina appeared 4 weeks before death, dropsy 5 days before death, and angina maligna 2 days before death. These suggestions should be carefully regarded. The following are examples of these entries:—

1st case—Measles,	(21 *days*,)	3d case—Scarlatina,	(4 *weeks*.)
Pneumonia,	(7 *days*,)	Dropsy,	(5 *days*.)
2d case—Diarrhœa,	(2 *days*,)	Angina,	(2 *days*.)
Cholera,	(12 *ho'rs*.)		

The entry should be stated in *minutes* or *hours*, if the disease is fatal in less than 48 hours' duration; in *days*, if fatal in less than 50 days' duration; in *weeks* or *years*, if of longer than 50 days' duration.

5. *In cases of death by small-pox, measles, scarlatina, typhus, and similar diseases, if the person has sustained more than one attack, state whether it was the second, third, or otherwise. If by ague, epilepsy, convulsions, or other diseases, which occur in fits or paroxysms, state the duration from the first fit, and add that of the last fit separately.*

Example—Epilepsy (5 *years*), last fit (6 *hours.*)

6. *In surgical cases terminating in death, the entry should state the primary cause or disease, the operation, and the secondary disease; and also the time intervening between the commencement of each and the death.*

Example—Fracture (20 *days*,) amputation (15 *days*,) mortification (2 *days.*)

7. *In case of death by external causes, or by violence, the nature of the injury and the circumstances under which it occurred should be stated, and whether by accident or design.*

Example—"Killed on railroad," "shot accidentally," "suicide by hanging," "suicide by arsenic."

8. *If poison be the cause of the death, state, as far as practicable, the time which elapsed between its being taken and the death.*

Example—Suicide, laudanum, (8 *hours*;) accident, oxalic acid, (20 *minutes*;) murder, arsenic, (30 *hours.*)

9. *The certificate of the cause of death should, if possible, be signed by a physician present during the last sickness; but if this be impracticable, then by some other person qualified to give it.*

It sometimes happens that the nature of the fatal disease cannot be discovered—even after a *post mortem* examination of the organs—and still more frequently in the absence of an examination. In such cases one or more of the leading symptoms and peculiar appearances should be stated. P. M. should be added when the causes of death have been verified by a *post mortem* inspection.

10. *The cause or causes of the disease should, in every case, as far as practicable, be ascertained and recorded.*

A systematic series of accurate and full observations, in relation to the causes of disease, is of the greatest importance. We have already expressed our views on the subject, (pp. 150–153,) and would again repeat our earnest desire that well directed efforts should be made, by public officers, professional men, and private individuals, to obtain and record such observations.

The following alphabetical nomenclature of the principal fatal diseases, and causes of death, contains the terms which we recommend to be used in the registers. The number prefixed to the name is the number of the disease, or cause of death, according to the order of its appearance in the classified nomenclature :—

17. Abscess, (*state where*;)
91. Accidents,
42. Aneurism, (*state the artery*;)
31. Apoplexy,
53. Ascites,
45. Asthma,
18. Atrophy,
54. Bowels, disease of,
41. Brain, dis. of,
46. Bronchitis,
92. Burns and Scalds,
19. Cancer, (*state where*;)
32. Cephalitis,
78. Childbirth,
1. Cholera,
2. Cholera Infantum,
1. ——— Morbus,
1. ——— Asiatic,
33. Chorea,
55. Colic,
47. Consumption,
34. Convulsions,
3. Croup,
72. Cystitis,

20. Debility,
35. Delirium Tremens,
73. Diabetes,
4. Diarrhœa,
21. Dropsy,
93. Drowning,
5. Dysentery,
56. Dyspepsia,
57. Enteritis,
36. Epilepsy,
6. Erysipelas,
94. Execution,
7. Fever, Intermitt't,
8. Fever, Remittent,
9. Fever, Typhus,
86. Fistula, (*state where;*)
95. Freezing,
58. Gastritis,
96. Glanders,
81. Generative Organs, dis. of,
22. Gout,
74. Gravel,
44. Heart, dis. of,
97. Heat,
23. Hæmorrhage, (*state where from;*)
67. Hepatitis,
59. Hernia,
84. Hip, dis. of,
10. Hooping Cough,
37. Hydrocephalus,
98. Hydrophobia,
48. Hydrothorax,
24. Infantile Disease,
25. Inflammation,
11. Influenza,
99. Intemperance,
38. Insanity,
60. Intussusception,
68. Jaundice,
83. Joints, dis. of,
75. Kidney, dis. of,
49. Laryngitis,
100. Lightning,
69. Liver, dis. of,
52. Lungs, dis. of,
26. Malformation, (*state the nature;*)
101. Malpractice,
12. Measles,
27. Mortification,
102. Murder, (*state the manner;*)
76. Nephritis,
103. Necusia,
90. Old Age,
70. Pancreas, dis. of,
39. Paralysis, (*state the nature;*)
79. Paramenia,
43. Pericarditis,
61. Peritonitis,
50. Pleurisy,
51. Pneumonia,
104. Poison, (*state the circumstances, the agent, and whether accidental or designed, &c.;*)
87. Purpura,
80. Puerperal Fever,
62. Quinsy,
82. Rheumatism,
13. Scarlatina,
28. Scrofula, (*state where manifested;*)
89. Skin, dis. of,
14. Small-Pox,
85. Spine, dis. of,
71. Spleen, dis. of,
105. Starvation,
63. Stomach, dis. of,
110. Still born,
29. Sudden, (*state its nature;*)
106. Suffocation,
107. Suicide, (*state circumstances;*)
5. Syphilis,
64. Teething,
40. Tetanus,
16. Thrush,
30. Tumor, (*state where; the nature of, &c.;*)
88. Ulcer, (*state where;*)
65. Ulceration,
77. Urinary Organs, dis. of,
81. Uterus, dis. of,
66. Worms,
108. Wounds, (*state where; the agent;*)
109. Unknown.

Classification. The following rules should be observed in classifying the abstracts of diseases, for sanitary and statistical purposes:—

1. *Under Zymotic diseases, class all such diseases as are known to be epidemic, endemic, or contagious, under any circumstances.*

The single and convenient word *Zymotic* is synonymous with, and designed to supersede, the long, inconvenient paraphrase, "epidemic, endemic, and contagious." Diseases of this class are called zymotic, or *fermenting*, because they are supposed to act like leaven, which, when thrown into a mass, affects a body or article that is prepared for, or is in a condition favorable to, its reception and operation. The existence of a disease of this class indicates the presence of some impure condition of the atmosphere, as the barometer indicates the presence of some of its natural conditions.

2. *Under Sporadic diseases, class all such as are known not to be epidemic, endemic, or contagious.*

3. *Subdivide the Sporadic class, and make a separate class of each*

subdivision, according as the disease affects the different classes of organs of the body.

4. *Diseases which have a general, and not a definite certain seat or effect, should form a distinct class.*

5. *Deaths from old age, and from external causes, should each form a distinct class.*

6. *The still born should be classed separately, and never included in the aggregate number of deaths, having never had a separate living existence.*

The following classification of the diseases named in the alphabetical nomenclature, is given as an illustration of the above rules :—

I. *Zymotic Diseases.*
1. Cholera,
2. Cholera Infantum,
3. Croup,
4. Diarrhœa,
5. Dysentery,
6. Erysipelas,
7. Fever, Intermittent,
8. Fever, Remittent,
9. Fever, Typhus,
10. Hooping Cough,
11. Influenza,
12. Measles,
13. Scarlatina,
14. Small-Pox,
15. Syphilis,
16. Thrush.

Sporadic Diseases.

II. *Uncertain Seat.*
17. Abscess,
18. Atrophy,
19. Cancer,
20. Debility,
21. Dropsy,
22. Gout,
23. Hæmorrhage,
24. Infantile Disease,
25. Inflammation,
26. Malformation,
27. Mortification,
28. Scrofula,
29. Sudden,
30. Tumor.

III. *Nervous Organs.*
31. Apoplexy,
32. Cephalitis,
33. Chorea,
34. Convulsions,
35. Delirium Tremens,
36. Epilepsy,
37. Hydrocephalus,
38. Insanity,
39. Paralysis,
40. Tetanus,
41. Organs, disease of,

IV. *Organs of Circulation.*
42. Aneurism,
43. Pericarditis,
44. Organs, dis. of,

V. *Respiratory Organs.*
45. Asthma,
46. Bronchitis,
47. Consumption,
48. Hydrothorax,
49. Laryngitis,
50. Pleurisy,
51. Pneumonia,
52. Organs, dis. of,

VI. *Digestive Organs.*
53. Ascites,
54. Bowels, dis. of,
55. Colic,
56. Dyspepsia,
57. Enteritis,
58. Gastritis,
59. Hernia,
60. Intussusception,
61. Peritonitis,
62. Quinsy,
63. Stomach, dis. of,
64. Teething,
65. Ulceration,
66. Worms,
67. Hepatitis,
68. Jaundice,
69. Liver, dis. of,
70. Pancreas, dis. of,
71. Spleen, dis. of,

VII. *Urinative Organs.*
72. Cystitis,
73. Diabetes,
74. Gravel,
75. Kidney, dis. of,
76. Nephritis,
77. Organs, dis. of,

VIII. *Generative Organs.*
78. Childbirth,
79. Paramenia,
80. Puerperal Fever,
81. Organs, dis. of.

IX. *Locomotive Org.*
82. Rheumatism,
83. Joints, &c., dis. of,
84. Hip, dis. of,
85. Spine, dis. of,

X. *Integumentive Org.*
86. Fistula,
87. Purpura,
88. Ulcer,
89. Skin, dis. of,

XI. *Age.*
90. Old age,

XII. *External Causes.*
91. Accident,
92. Burns and Scalds,
93. Drowning,
94. Execution,
95. Freezing,
96. Glanders,
97. Heat,
98. Hydrophobia,
99. Intemperance,
100. Lightning,
101. Malpractice,
102. Murder,
103. Necusia,
104. Poison,
105. Starvation,
106. Suffocation,
107. Suicide,
108. Wounds,
109. *Unknown*,
110. *Still born.*

XVI. Communication relating to the Cellar-Dwellings and Lodging-Houses of Liverpool, received by the Commission from W. H. Duncan, M. D., Medical Officer of Health. (p. 165.)

Public Offices, 2 Cornwallis Street, Medical Officer of Health's Department, Liverpool, 10th December, 1849.

The description of the inhabited *cellars* of Liverpool will be found in the appendix to the First Report of the Health of Towns Commission, page 14, folio edition.

The greater liability of the cellar population to disease had been long notorious, and in particular it was found that they suffered from fever in a proportion 35 per cent. greater than the rest of the working population. So long ago as 1802, the late Dr. Currie (Burns' biographer) called the attention of the common council of Liverpool to the unhealthiness of the cellar-dwellings; but nothing was done in the matter until forty years afterwards, when (in 1842) the council obtained power (5 and 6 Vict. c. 44) to prevent the separate occupation of any cellar less than 7 feet in height, or the floor of which was more than 5 feet below the level of the street, or which had not an area in front of at least 2 feet wide, from 6 inches below the level of the floor to the surface of the street.

The occupation of cellars in *courts* was declared illegal.

Under this act about 3,000 cellars were cleared of their inmates up to the end of 1846; but it being found that the provisions of the act were not sufficiently comprehensive to embrace many cellars unfit for habitation, the council, in their local sanitary act, (9 and 10 Vict., c. 127,) which came into operation on the 1st January, 1847, took powers to prevent the separate *occupation* of any cellar, the floor of which was more than *four* feet below the level of the street, or which had not an area in the front of not less than *two and a half* feet in width. Cellars built or altered under the former act, were, however, exempted from the operation of this clause.

At the time of the passing of this act, there were in the borough 14,084 cellars, of which 7,668 were inhabited, and the remainder either had been let or were intended to be let for separate occupation.

The inhabited cellars contained nearly 30,000 inmates.

Of the entire number of cellars, 12,877 were found to be, under the provisions of the act, unfit for habitation; but of these about 1,300 have been claimed as having been built or altered under the former act, and may therefore be legally occupied, so that the total number of cellars in Liverpool, which may be legally used as separate habitations at the present time, is about 2,500. After the passing of the act of 1847, the clearing of the illegal cellars was rapidly proceeded with for some months, when, it appearing that it had the effect, in many instances, of over-crowding the court houses, the health committee, at my recommendation, (in order to give time for the supply of new habitations to overtake the demand,) resolved that not more than 100 cellars per month should be cleared of their inmates. Up to the present time, upwards of 4,700 cellars have been thus cleared, exclusive of 355 cellars in courts, which had continued to be inhabited, notwithstanding the prohibition of the act of 1842. The number of inmates ejected amounts, in round numbers, to 20,000. The illegal cellars

still inhabited, and which remain to be cleared, are 2,256, containing about 8,500 inmates.

Of the 7,668 inhabited cellars, 5,869 were found, on inspection, to be damp, wet or filthy. A good deal of difficulty has been experienced in carrying out the act, from the reluctance of the inmates to leave their miserable abodes, and the expedients to which they have recourse in order to evade the law. Their reluctance seems to be founded chiefly on the convenience offered by the separate entrance to the cellars, and the facilities for selling cakes, fruit, vegetables, chips, &c.; and so strong is this feeling, that were it not for the constant vigilance of the police, and of the inspectors employed for the purpose, the cellars would be reoccupied nearly as fast as cleared.

In 1,381 cases, where the parties refused to obey the notice to leave their cellar habitations, it has been found necessary to summon them before the magistrates; and in 743 cases, cellars which had been reoccupied after having been cleared, have been cleared a second time. To bring a cellar within the provisions of the act, the magistrates require proof of its being occupied *during the night;* and, in order to withhold this proof, the parties are in the habit of concealing, in the day-time, the beds, or the sacks, straw or shavings, which they use as bedding. There can be no doubt that many cellars are, at the present moment, inhabited in Liverpool, which in this way evade the operation of the act. Many illegal cellars, also, are occupied during the day-time only, the occupants finding accommodation during the night in the house above or in some adjoining dwelling. Although this is a compliance with the clause, as interpreted by the magistrates, it is clearly an evasion of the *spirit* of the act.

With regard to the effect of this measure on the health of the 20,000 ejected cellar inhabitants, as it is obviously impossible to trace their further history in their new abodes, no direct answer can be given to the question. An approximate answer may be derived, however, from a comparison of the ravages in a particular district of the epidemic fever of 1847, which visited us before the clearing of the cellars was commenced, with those of the cholera epidemic of 1849, which did not come upon us until nearly 5,000 cellars had been cleared of their inmates. The district in question is selected, because it is the one with regard to which I am in possession of the most accurate statistics respecting *both* epidemics, and the one which formerly contained the largest proportion of inhabited cellars of the worst description.

In 1847, the cellar population formed about 12 per cent. of the entire population of the district, and at the present time it amounts to less than 2 per cent. In connection with this fact, I submit it as significant of the sanitary value of the measure in discussion, that while the epidemic, which raged previously to the clearance of the cellars, carried off upwards of 500 of the inhabitants of the district, that which prevailed after the cellar population had been reduced to one sixth of its former amount, caused only 94 deaths in the same district; the total number of victims *throughout the borough*, from each epidemic, being very nearly alike.

I do not wish it to be inferred that the *whole* of this marked difference is to be ascribed to the reduction of the cellar population, for

there is no doubt that much had been done in the interim, *in other ways*, to improve the sanitary condition of this, in common with the other districts of the town; but in this district the cellars were of the worst description, and the ejection of their inmates had been effected to a greater extent than in any other.

I am aware that, from the different nature of the two epidemics which have been compared, this may not be considered very satisfactory proof of the sanitary value of the cellar clearances; but the nature of the case admits of no better proof, and it is to be remembered that the two epidemics, although differing in name, have generally attacked the same districts. In conclusion, I may state, that, although instances must, no doubt, have occurred where parties ejected from cellars have taken up their abode in dwellings even more injurious to health than those which they were compelled to quit, (an evil, perhaps, inseparable from a measure of this nature,) yet no one, who has personally inspected the worst description of the Liverpool cellars, can hesitate to admit the policy of investing the authorities with power to prevent their being used as the habitations of human beings.

14*th December*, 1849.

The power to compel the registration of *lodging-houses* in Liverpool, to enforce cleanliness and ventilation therein, and to fix the number of lodgers to be received, was conferred on the Town Council, by their local sanitary act, (9 and 10 Vict, c. 127, sec. 125.)

The clause has been interpreted by the magistrates to apply exclusively to houses receiving *nightly* lodgers.

The by-laws made under the powers of this act, and of which a copy is transmitted herewith, came into operation in August, 1848.[1]

[1] The following "Ticket," issued to the keepers of registered houses, is extracted from these "By-Laws respecting Lodging-Houses:"—

No. [*Insert number on register.*] Lodging-house, [*Insert the number and situation of the house in respect of which the ticket is granted.*] kept by [*Insert keeper's name*] registered to accommodate lodgers.

RULES AND INSTRUCTIONS.

1.—No greater number than lodgers are to be received or accommodated in this house at any one time.

2.—The Windows of every sleeping-room in this house are to be opened, and kept open to their full width, from nine to ten o'clock every morning, and from two to three o'clock every afternoon, (weather permitting) unless in case of sickness in any room requiring the windows to be closed.

3.—The floors of every room in this house shall be well swept every morning before the hour of ten, and shall be well washed during the morning of every Friday.

4.—This house shall be thoroughly cleansed, and the walls and ceiling of every room in this house shall be well and sufficiently lime-washed, and the blankets, rugs, and bed clothes, and covers used in this house, shall be thoroughly cleansed and scoured in the first week of each of the months of April, August, and December.

5.—Upon any person in this house, whether a lodger or one of the family, being affected with fever or any infectious or contagious disorder, the Keeper shall forthwith give notice thereof to the Medical Officer of Health, at his office, and the Medical Officer will visit the house and take such proceedings as he shall think proper in compliance with this act.

6.—If any person in this house shall be affected with fever or any infectious or contagious disorder, the blankets and bed-clothes used by such person shall be thoroughly cleansed and scoured, and the bedding fumigated immediately after the removal of such person; and where the bedding used consists of shavings or straw, the same shall be burned immediately after such removal.

7.—The keeper of this house shall provide sufficient accommodation for washing, together with a sufficient supply of water for the use of the lodgers herein.

8.—The keeper of this house shall reduce the number of lodgers, or shall cease to receive and accommodate lodgers altogether, immediately upon receiving notice to that effect from the Medical Officer, or the Inspector of Nuisances.

9.—This ticket shall be placed and kept in such situation in this house as the Inspector of

Up to the present time, the following are the numbers of applications to register, and of lodgers applied for, together with the number of houses actually registered and of lodgers allowed, after inspection of the houses :—

Applications to register, . . .	769
Houses registered, ...	449
Lodgers applied for in registered houses, .	5,494
Lodgers allowed, ...	2,992

Nearly one hundred houses for the registration of which application has been made, remain for inspection, the registration having been suspended during the late cholera epidemic, from the time of the medical health officer having been absorbed by other duties. About two hundred others have not been registered, as not being lodging-houses of the kind contemplated by the act.

The first effect of the operation of the by-laws was to reduce, materially, as will be observed, the *overcrowding* of the common lodging-houses,—a most prolific source of evil. But the difference between the number of lodgers allowed and that applied for, by no means represents the whole amount of the benefit derived, as it is well known that the keepers of the worst description of lodging-houses, on finding that the powers of the act were about to be enforced, reduced the number of their beds before applying for the registration of their houses, and did not venture to *ask* for more than a portion, in some cases not exceeding one half of the number of lodgers they had been accustomed to receive. It should be stated, also, as a consequence of the limited number of lodgers allowed to the lowest class of houses, that many of these have ceased to be occupied as lodging-houses, the keepers not finding the occupation a remunerative one, under the restrictions imposed in virtue of the act.

A second effect of the regulations has been to produce a manifest and most decided improvement in the *cleanliness* of the registered houses,—an improvement which has struck every one acquainted with their previous condition.

A third effect has been to improve the *ventilation* of the houses in numerous instances. This has been chiefly brought about by fixing the number of lodgers to be allowed, in the first instance, below that which the cubic contents of the sleeping rooms would justify, with the inducement held out that an additional number would be allowed on certain alterations being made to facilitate ventilation. Under this arrangement, additional lodgers have been allowed to 109 registered lodging-house keepers, the number of additional lodgers so allowed being 614.

On the by-laws coming into operation, the inspectors and sergeants

Nuisances shall from time to time direct, and shall be produced and delivered to such Inspector on demand.

N. B.—The keeper of any Lodging-house defacing or removing this ticket, or disobeying the above Rules and Instructions, will be liable to the several penalties in that behalf provided by By-Laws for regulating Lodging-houses, a copy whereof may be obtained by application at the office of the Town Clerk, in the Town Hall.

By order of the Health Committee,

(Signed)

This Ticket was issued on the day of *A. D.* } TOWN CLERK.

of the police force (about 75 in number) were appointed inspectors of lodging-houses, with instructions to visit, during the night, any house of the description contemplated by the act, in which they had reason to believe that nightly lodgers were received, and to lay informations before the magistrates for keeping unregistered lodging-houses, where they found that such was the case. They were also instructed to visit, from time to time, the registered lodging-houses in their respective districts, and to lay informations in all cases where they found a greater number of lodgers than that for which the house was registered. The number of informations laid by the inspectors up to the present time is, for

Not applying to register, . . .	311
Overcrowding, ...	133

The number of instances of overcrowding appears large, amounting, as it does, to thirty per cent. of the entire number of registered houses. But by far the largest proportion of these cases occurred during the period immediately following the commencement of the operations under the act, when the keepers probably thought they might violate the regulations with impunity, not being aware of the means which were adopted to enforce their observance. The instances of overcrowding have latterly been *comparatively* few, but the fact above stated shows the necessity of sustained and constant vigilance on the part of the inspectors, without which there can be but little doubt, from the known character of most of the keepers, that the regulations would be wholly set at nought. Many of the keepers have been committed to jail for nonpayment of the fines imposed under the by-laws.

A very large proportion,—probably nine tenths,—of the registered lodging-house keepers are *Irish*.

With regard to the effect of these regulations on the health of the inmates, it is difficult to give any statistical results ; but it may safely be affirmed that *fever* is much less prevalent in these houses than it was previously to the act coming into operation. Information is now in course of preparation as to the number of fatal cases of cholera occurring in registered lodging-houses during the recent epidemic, and there can be little doubt that the result will show that the proportion of such cases was considerably less than the proportion occurring among the same number of individuals in a similar rank of life, living elsewhere.

It remains to notice certain defects in the powers conferred by the Liverpool sanitary act, which interfere with its working, and prevent its yielding the full measure of benefit which might otherwise be derived from it.

In the first place, the limitation of the provisions of the act to *nightly* lodging-houses operates injuriously. A large number of houses are sublet, each room being occupied by one or more families ; in some cases as many as three or four who pay a *weekly* rent. These houses present many of the evils of the nightly lodging-houses, particularly in the matter of *overcrowding* in an undiminished form. The act gives no power to interfere with these ; and yet the number of inmates of such houses in Liverpool probably exceeds twenty fold the number in the nightly lodging-houses.

The act gives no power to fix the number of lodgers to be received in each *room* of the house, the power being simply to fix the number to be received into the *house*. For instance, in a house containing three rooms, each of them adapted to accommodate four lodgers, and therefore registered for twelve, there is nothing to prevent the keeper letting off two of the rooms to a married couple in each, and putting eight lodgers (to make up his complement,) in the remaining room, which would thus contain twice the number consistent with health. Or he might even occupy the remainder of the house with his own family or for his own purposes, and place the whole of his twelve lodgers in a room calculated only for four. No doubt this might be discovered after a time, and the number of his lodgers reduced, but in the interim much mischief might ensue.

The clause gives no power to refuse to register any house for the registration of which application may be made, however unfit it may be considered for the purposes of a lodging-house. The only remedy, in such case, is to limit the number of lodgers to *one*, which is the course practically adopted.

In conclusion, it must be understood that the registration of the Liverpool lodging-houses is as yet by no means complete, being still in progress.

W. H. DUNCAN, M. D.,
Medical Officer of Health.

XVII. Regulations proposed relating to Vacant Houses.

Let every house on becoming vacant be examined by a competent person as to its being in a condition adapted for the safe dwelling in of the future tenants. Let a certificate to that effect be granted to the landlord, and enact that the rent of every house, which is not thus certified to be in a condition fit for the safe dwelling in of the tenants, shall not be recoverable at law.

The sum which would be required to pay the officials engaged in the duty of inspection could easily be raised by charging a small fee, varying from 1s. to 2s. 6d. on the occasion of each inspection. A revenue adequate to pay a sufficient staff of inspectors could easily be raised in this way.

The result—the immediate result would be, that many thousands of houses which at present are very pest-dens and sepulchres, would be put into a state compatible with the continuance of a healthy existence.

It is true that whenever the property was in such a condition that healthy existence was impossible, the certificate would be denied, and the rent derivable from the property lost to the owner. But it is to be remembered, firstly, that property has its duties, and that the performance of the duty now demanded—namely, the putting of houses and dwellings into a habitable condition—is essential to the well-being of society. Secondly, that whatever might be the loss to the owner, the loss to the tenant—whom he defrauds of health, and the ability to labor; in whose frame he implants the seeds of disease, and on whom he fixes the doom of enduring poverty—is infinitely greater. Not only, however, are the poor impoverished, degraded, brutalized, and deadened to the virtues and higher feelings of our nature, nay, robbed of their health, and of their lives, but the community at large is taxed

in a thousand ways to relieve the evils created by the small landlord. Whole families have been known to be consecutively attacked by fever on ignorantly taking up their abode in these pest-dens, and to be removed to the workhouse, there to be attended in their illness, and supported during their recovery, at the public expense. Overseers and relieving officers are known to declare, that as surely as new tenants occupy certain localities so surely will they become pauperized through disease, and ultimately be lost to society as workers or useful members. Cholera selects, with unerring certainty, and typhus firmly sits down in these places. Year after year, families are left desolate in those spots. All at middle age perish of typhus; and the children, spared from scarlatina and other epidemic diseases, are left a prey to the vices of society. If the people, and the female portion particularly, but knew the moral evils that spring from such neglected causes of disease, they would blush at their apathy in denying to the children of the poor means to preserve them from contamination. The female children of the poor brought up in workhouses are notoriously known as a class to replenish the ranks of the most degraded and abandoned of their sex. The children, left to the charitable protection of the public, become—firstly, public burdens, subsequently public evils, chiefly through the neglect of society in providing healthful homes for the parents. For if the parents were not slaughtered by the unpitying typhus, protectors and monitors, interested in their progress in life, would be left to guide and warn them. These, however, are not the only evils; parishes become overwhelmed by burdens from which they in vain try to free themselves, and are at last brought to cry out in despair, "It would be cheaper to buy up the property and raze it to the ground, than to keep it thus a constant beggar home and pauper haunt." Let the burden be placed on the right back. Let that landlord be refused the power to recover rent whose house is not certified to be fit for human habitation. Old houses will then be renewed. New houses will be built for the poor; and one of the greatest results for the welfare of the poor and of the people will be effected, with no violation of the rights of individuals, through an agency, the expense of which will be altogether inconsiderable.—*Journal of Public Health*, Vol. II, p. 320.

XVIII. Tenements for the better accommodation of the Laboring Classes. (*See p.* 208.)

Boston, April 7, 1850.

Lemuel Shattuck, Esq., *Chairman of the Sanitary Commission*:—

Dear Sir:—In reply to your inquiries as to what has been done in erecting buildings expressly for the accommodation of poor tenants, and what success has attended such undertakings, I beg leave to say that I am aware of only one public movement of the kind in the United States.

A building association was formed in Salem, in 1848. Mr. Silsbee, one of the directors, informs me that the capital is $7,000, of which $3,000 has been expended in the purchase of real estate, and the remainder in repairs, and in the erection of a new building. This building is 106 by 25 feet, and contains 12 tenements, each having one room

about 12 feet square, a pantry, and small bed-room. The tenants have free use of aqueduct water, ample cellar and wood-house room. The twelve tenements rent for $9 per quarter, and six attics for $5 to $12 per year, according to size. The agent is paid $50 per annum for collecting rents and looking after the building. The rents are regularly paid.

An individual in New York is erecting a large building for this purpose, as an investment. It is 244 feet by 35; and will contain 144 tenements of 2 rooms each. An association was formed and funds subscribed, two years since, for the purpose of erecting such buildings in that city; but a charter could not be obtained, and they have not proceeded beyond the preparation of plans.

As regards the success of such undertakings, I can speak from my own experience.

I erected, in the autumn of 1844, a brick building in Boston, with sixteen tenements of two rooms each, which has since been filled with tenants, generally of the poorest class of laborers, some of them being people entirely dependent on chance jobs, and some widows with children able to earn but a very scanty livelihood; and nearly all Irish. The rents were fixed at $1 per week for the two lower floors; and 87 cents and 75 cents respectively for the two upper floors; and they have been paid with so much regularity that the loss by bad debts is very trifling,—less than one fourth of one per cent. per annum on the cost. The wear and tear have also been very slight, and the breakage confined entirely to glass in the cellar windows, and some plastering round the rooms. Were the partitions made of brick, as they should be in such a house, the wear would be very slight. The principal loss has been from vacant rooms caused by the frequent changes of residence of such tenants,—still I have had several families in the house over two years, and some over four years. One of the tenants has had the charge of the house so far as letting the rooms and collecting the rents are concerned, and has had his rent free for performing this service. He might do this as well in a building containing 50 tenements as in a smaller one. It has also been part of his duty to report disorderly or unpunctual tenants, who have been ejected; but no restraints have been imposed upon them.

On the whole my experience has satisfied me that when the landlord lets his rooms at reasonable rates to this class of tenants, they are willing and able to pay their rents; that the rents they pay, taking the cost of such buildings, the wear and tear, &c., into view, are above the average rents; and that, under proper management, such houses are as good property as any real estate excepting a few stores and offices in favorite situations. That the erection of well-constructed buildings for this purpose would add greatly to the physical and moral health of the community will not, I suppose, be disputed.

This subject has received far more attention in England than in this country. I believe, however, you have received the English reports; I therefore will not enlarge upon their contents here. I trust you will be able to place this subject in such a light in your report as to convince the Legislature that it is not unworthy of their attention.

I remain, Dear Sir,

Your very ob't serv't,

STEPHEN H. PERKINS.

Extracts from the Report of Dr. Simon on the Sanitary Condition of London, relating to Dwelling-Houses for the better accommodation of the Poor :—

Next, very briefly, let me allude to what has been done in respect of the habitations of the poor; first, by the Society for the Improvement of the Condition of the Laboring Classes, under the patronage of Her Majesty the Queen and the Queen Dowager, with the Prince Albert for its president, and Lord Ashley for its chairman; secondly, by the Metropolitan Association for Improving the Dwellings of the Industrious Classes, under the chairmanship of Sir Ralph Howard, and with a committee which, like that of the former society, includes many of the best and wisest, as well as the highest persons of the country. Under the influence of these societies the following experiments have been made.

In the old Pancras road a very large building has been erected to accommodate 110 families separately and distinctly, in sets of two and three rooms each. Each set of rooms has its own boiler, range, oven, and coalbox; has a separate scullery, in which are sink, cistern, and dust-shaft; has its own water-closet, its own ample supply of water, and many other conveniences. The rents vary from 3s. 6d. to 5s. per week for a set of two rooms; and from 4s. 9d. to 6s. 3d. for a set of three rooms. The founders of this establishment have recently purchased land at the end of Spicer street, Spitalfields, on which to erect a lodging-house for 300 single men, and also houses for families.

In the Lower road, Pentonville, houses of three different classes have been built on the same general principle of furnishing every convenience and sanitary requisite. They accommodate, on the whole, twenty-three families and thirty single women, widows, or of advanced age. The entire houses for families, with all the above-mentioned conveniences, are at a rent of 6s., having a good sized living-room, two bed-rooms, with additional enclosed recesses for children's beds, a yard at the back of the house, and the joint use of a wash-house and drying-yard. A floor of two rooms is rented at 3s. 6d.; and a single room by a single person at 1s. 6d.

In George street, St. Giles's, a model lodging-house has been established, affording accommodation to 104 single men, and combining everything essential to such an establishment. The ventilation and drainage have been carefully attended to; an ample supply of water is provided, gas extends through the house, the dormitories are arranged so as to keep their inmates private from each other; there are washing-closets fitted up with every requisite for cleanliness; there is a bath-room supplied with hot and cold water; there are a kitchen and washhouse furnished with all appropriate utensils, a pantry hatch, with separate, ventilated, and secure compartments for the food of each inmate; in the pay-office is a small, well selected library for the service of the lodgers, and the use of a spacious coffee-room is likewise for their common convenience. Their pay is 4d. per night, or 2s. per week—an amount below the ordinary rent paid for the most miserable accommodation in a tramper's lodging-house.

At 76 Hatton garden a lodging-house for 57 single women has recently been opened, consisting of three floors of dormitories, divided into separate compartments, and a basement fitted up with kitchen, washhouse, bath, pantry, safes, &c.

In Charles street, Drury lane, three tenements, originally separate, have been converted into a single lodging-house for 82 single men, on the same general plan and at the same rent as that in George street, St. Giles's.

All the lodging-houses are furnished, and the inmates are supplied with utensils for their food and other purposes, which must be returned, or made good at their leaving.

In all these lodging-houses rules exist for the purpose of insuring cleanliness, sobriety, carefulness, and general propriety of conduct; any infraction of which subjects the offender to immediate expulsion. For the sake of those who choose to avail themselves of the opportunity, Scripture Readings are appointed to take place in the common room every evening, at nine o'clock; and copies of the Scriptures, with other well-chosen books, are left in charge of the superintendent for distribution among the lodgers, in the hope that they may thus be induced to occupy their leisure to advantage.

In the construction of all these establishments, equally, the greatest pains have been taken to bring sanitary science to bear on the comfort, and convenience, and health of the inmates. Ventilation, drainage, facilities for decency and for cleanliness, have in every instance been made the leading considerations of the architect.

In regard to these model houses and model lodgings, it would, I think, be a great error to estimate their benefit as merely relative to the number of persons at any one time inmates of them. No doubt it is a great advantage that they furnish, at the ordinary price of the day, or at a still lower price, so excellent accommodation to several hundreds of persons; and it is a still greater good (particularly in regard of those established for single men and single women,) that they drill their inmates into decent and orderly habits, and accustom them to a high standard of household accommodation, which will probably influence their subsequent married lives in the same desirable direction. But, indirectly, their utility has a far wider scope. They stand in bright contrast to the dark features of filth and unwholesomeness which environ them; they familiarize the poorest classes generally with all the practical advantages of cleanliness; they show that dirt is not inevitable; they therefore create and foster among the humblest members of society, a laudable discontent with defective sanitary arrangements, and they establish a strong public opinion, grounded on experience, in favor of those conditions of cleanliness and comfort which determine the maintenance of health.

That all the great results of sanitary science can be applied in their utmost perfectness to the dwellings of the poor for the payment of a rent often below, and never above the average given for some miserable doghole that poisons its inhabitants, is a truth of immense importance, deserving the widest dissemination, and pregnant with the most hopeful promise. Such advantages spring from and illustrate the economical application of the associative principle; they cannot be obtained otherwise than by the application of capital in such an amount as lies only within the compass of wealthy corporations, or is reached by the voluntary combination of several private purses. While the laboring classes are abundantly able to maintain these institutions when established, and to render them amply remunerative to those whose

capital has first founded them, it is obvious that no power of association lying within their means can suffice to originate such work.

This task of initiation rests with others. And therefore it is that I have been induced to bring under your notice, as a most important part of my subject, the outline of what has been done in the matter of model dwellings and public baths and washhouses. Feeling assured that establishments of this nature are of infinite utility in the several respects I have enumerated; feeling assured that beyond their immediate operation on the health of inmates and users, they also tend, by their indirect educational influence, to improve the social habits, to promote the civilization, to elevate the general tone and character of the laboring classes, I earnestly recommend them to your attention.

XIX. Forms of Blank Schedules to be used in ascertaining the Sanitary Condition and the Amount of Sickness, of Different Communities.

We have urged, in our XXVth and XXVIth recommendations, the importance of obtaining information concerning the amount of sickness which has existed under different circumstances. The following are specimens of the blanks we have prepared and recommended, pages 178 and 179. The first relates to sickness in general; and the second has special reference to schools. We have filled a part of the blanks to illustrate the subjoined directions. In the first we have made two kinds of entries, one concerning a manufacturing establishment, and the other concerning a farmer's family. The blank, however, is designed for one kind of entry only, at one time.

Directions for filling the Schedule, p. 405. (*See p.* 178.)

1. Under heading 1, entitled "Local Circumstances," state whether the dwelling-house, family or company, is in the neighborhood of a pond; or near low or marsh land; or decomposing animal or vegetable matter; or in a narrow street, lane or court; or in a damp locality; or in a house badly lighted, warmed and ventilated; or in a filthy, overcrowded condition; or otherwise, as the facts may be.

2. Under heading 2, entitled "Personal Circumstances," give the occupation of the head or members of the family, or company; state their means of subsistence,—ample or poor; their habits,—temperate or intemperate; cleanly; industrious; general health,—good or bad; or otherwise, as the facts may be.

3. Under heading 3, entitled "Month," insert the number of days observed, and the name of the month or months.

4. Under heading 6, entitled "Number of Persons observed," insert the number of persons belonging to the family or company, during the time of observation, against each class of ages,—males and females separately.

5. Under heading 7, entitled "Total number of days observed," insert the whole number of days that all lived, including Sundays. This is to be obtained by multiplying the number of each class of persons, according to age, by the number of days observed, as stated in the first column.

The Sanitary Condition of the Manufacturing Company, *or of the* Family *of* N. I., *during the year* 1850.

1. Local Circumstances.

[Company.] *Boarding-houses crowded—not well ventilated.*

[Family.] *Location dry—no stagnant water near—house well warmed and ventilated.*

2. Personal Circumstances.

Some of the operatives are uncleanly and negligent—others the reverse.

Farmer—means of subsistence ample—temperate, industrious, and cleanly.

3 Month.	4 Sex.	5 Ages.	6 Number of persons observed.	7 Total number of days observed.	8 Number of new cases of sickness.	9 No. of days' sickness observed.	10 Number of deaths.	11 REMARKS, Specifying the probable causes of sickness, the names of diseases, and the causes of death.
Observations made during 18 days in	MALES.	Under 15						
		15 to 60						
		Over 60						
	FEMALES.	Under 15						
		15 to 60						
		Over 60						
Observations made during 31 days in *March*, 1850.	MALES.	Under 15	4	121	1	21		1 *case Hooping Cough—recovered after* 21 *days—taken at school.*
		15 to 60	12	372				
		Over 60	1	31	1	14		1 *Typhus Fever, caused by over-exertion—recovered in* 14 *days.*
	FEMALES.	Under 15	5	155				
		15 to 60	50	1550	2	30	1	1 *Cholera Morbus, caused by improper diet—died* 8*th day.* 1 *case dysentery—recovered* 21*st day.*
		Over 60	2	62				
Observations made during 30 days in *April*, 1850.	MALES.	Under 15	2	60				
		15 to 60	5	150	1	12		*Health generally good—a man,* 25 *years old, had a pleurisy, caused by taking cold—well in* 12 *days.*
		Over 60	1	30				
	FEMALES.	Under 15	3	90	1	10		*Child* 2 *years old—dysentery, caused by teething.*
		15 to 60	8	240				
		Over 60	1	30				

6. Under heading 8, entitled "Number of new cases of sickness," insert the number of cases of sickness, in the family or company, under observation. If the same person continue sick over one period of observation into a subsequent one, no new entry of such case is to be made, though the days of sickness are to be counted. If a person get well and is again attacked it is to be considered a new case.

7. Under heading 9, entitled "Number of days of sickness observed," insert the whole number of days of sickness during the period of observation, including Sundays, of all, of each class of ages, by adding together the days of each, the males separately from the females. By "sickness" is meant such illness as incapacitates for labor. Slight indisposition, occasioned by colds, &c., is not to be reckoned.

8. Under heading 10, entitled "Number of Deaths," insert the number of deaths during the period, against each age at which they occurred.

9. Under heading 11, entitled "Remarks," &c., insert such facts as can be ascertained, relating to the subjects suggested in the heading, to show the sanitary condition of the family or company.

One sheet of these blanks of four pages will serve for one family for twelve months, or a year's observations. These blanks are to be furnished by the Boards of Health, as occasion may require, to physicians, families, manufacturing companies, almshouses, prisons and other institutions; to be filled out monthly, and returned to the Board at stated periods. Copies or abstracts of those returns are to be made and transmitted to the General Board of Health. By means of these facts, all the interesting and important relations which the attacks of sickness, the duration of sickness, and the different diseases bear to health, at different ages and among different sexes, and under different circumstances, may be ascertained.

The Sanitary Condition of Public School No. 8, *in* Saugus, *for* 1850.

1. Local Circumstances. *House, brick—warmed by close stove—not convenient—ill ventilated.*					2. Personal Circumstances. *Parents of scholars principally shoemakers—some uncleanly.*			
3 Month.	4 Sex.	5 Ages.	6 Number of scholars observed.	7 Total number of days observed.	8 Number of new cases of sickness.	9 No. of days' sickness observed.	10 Number of deaths.	11 REMARKS, Specifying the probable causes of sickness, the names of the diseases, and the causes of death.
Observations made during 18 days in	MALES.	Under 5						
		5 to 10						
		10 to 15						
		Over 15						
	FEMALES.	Under 5						
		5 to 10						
		10 to 15						
		Over 15						
Observations made during 30 days in *April*, 1850.	MALES.	Under 5	5	150				
		5 to 10	8	240	1	10		*Measles.*
		10 to 15	14	420				
		Over 15	3	90				
	FEMALES.	Under 5	4	120				
		5 to 10	10	300				
		10 to 15	15	450	2	30	1	1 *Scarlatina, died 18th day after attack, aged 12 years.* 1 *Pneumonia—recovered in 12 days.*
		Over 15	2	60				

Directions for filling the Schedule. (*See p.* 179.)

1. Under heading 1, entitled "Local Circumstances," state how the schoolhouse is situated. Whether in an open, healthy locality, or in a confined street or court; or in the vicinity of any nuisance. Of what materials is the house built? brick or wood? How is it warmed? by open fire-place, stove or furnace? How ventilated? State the number of cubic feet in the schoolroom; and any other pertinent facts.

2. Under heading 2, entitled "Personal Circumstances," insert the principal occupations of the parents or guardians of the scholars? Are the children cleanly in their habits, regular in their attendance, and industrious in their studies, or otherwise?

3. Under heading 3, entitled "Month," insert the number of days observed, and the name of the month. If the observations extend over only a part of the month, insert the number of days in the month actually observed. Make the same entries in each successive month or period.

4. Under heading 6, entitled "Number of Scholars observed," insert the number of Scholars belonging to the school during the time of observation, against each class of ages, males and females separately. This is to be done by counting the number of schools on the school list.

5. Under heading 7, entitled "Total number of days observed," insert the whole number of days that all lived, including Sundays. This is to be obtained by multiplying the number of each class of ages by the number of days observed as stated in the first column.

6. Under heading 8, entitled "Number of new cases of sickness," insert the number of cases among the scholars under observation. If the same person continue sick over one period of observation into a subsequent one, no new entry of such case is to be made, though the days of sickness are to be counted. If a person get well and is again attacked, it is to be considered a new case.

7. Under heading 9, entitled "Number of days of sickness observed," insert the whole number of days of sickness during the period of observation, including Sundays, of all of each class of ages, the males separately from the females. This is to be ascertained by keeping a register of the absence of each scholar, and counting the days of absence on account of sickness, and not for other causes, of all of that age. By "sickness" is meant, such illness as incapacitates the scholar for attending school. Slight indisposition, occasioned by colds, &c., is not to be reckoned.

8. Under heading 10, entitled "Number of Deaths," insert the number of deaths during the period, against each age at which they occurred.

9. Under heading 11, entitled "Remarks," &c., insert such facts as can be ascertained, relating to the subjects suggested in the heading, to show the sanitary condition of the school.

A *Sanitary Committee* should be appointed monthly, by the teacher, to keep these records, and make the reports under his superintendence. These reports are to be made monthly during the year or school term, and transmitted at its close, or at some other appropriate period, to the Board of Health of the town, and copies or abstracts of them furnished to the General Board of Health. The proportion of sickness to health in the schools may thus be ascertained.

XX. Register of Medical Cases professionally attended.

On pages 408 and 409 we present an extract from a work entitled "Register of Medical Cases professionally attended," to illustrate the remarks under our XLVIth recommendation, p. 232. Cases No. 25, 26, and 27, are filled out to illustrate the mode in which the entries are made. The pages are designed for the entries concerning 4 cases. Their length is the same as in the original. Their breadth has been compressed by the printer, each about three quarters of an inch, or the breadth of the left hand column on the right page. Sufficient space is given for desirable records in most cases; and the size is convenient for carrying in the pocket.

PATIENT.	Disease. Primary and Secondary.	Date of their appearance.
No. | Name, Personal Causes and Circumstances. Age, . Sex, . Local Causes and Circumstances. Residence,		1850.
No. 25 | Name, *Mary Brown.* Personal Causes and Circumstances. Age, 8. Sex, *F.* *Daughter of blacksmith—native of Maine—exposed at school—uncleanly—irregular in habits—third in family of seven children.* Local Causes and Circumstances. Res. *Salem st.* *Habitation filthy—crowded and poorly ventilated—in a crowded and dirty neighborhood—much decaying surface rubbish.*	*Measles.* *Pneumonia.*	*Feb.* 28. *March* 6.
No. 26 | Name, *Peter Smith.* Personal Causes and Circumstances. Age, 30. Sex, *M.* *Lawyer—married—medium size—rather robust—regular and temperate habits—in active business—been exposed to inclement weather for the last three weeks on business from home.* Local Causes and Circumstances. Res. *Bad accommodations, damp, &c., while from home—change in food, water, &c.—fatigue.*	*Typhus.*	*Oct.* 14.
No. 27 | Name, *John Jones.* Personal Causes and Circumstances. Age, 12. Sex, *M.* *Errand boy—well conducted—thrown from wagon.* Local Causes and Circumstances. Res. *Brookline.*	*Fractured skull.* *Protruded brain.* *Lock-jaw.*	*Nov.* 5. " 8. " 13.

Kind and Date of result.	Duration.	Dates and important Facts in each case.
1850.		
Died March 14th.	14 *days.* 8 *days.*	*First saw the patient March 3, being the 4th day of disease—pulse 120—respiration 17—eruption quite fair, but skin dry—throat affected—slight cough. March 5: Symptoms mitigated—considerable diaphoresis. March 7, eve.: Relapse from exposure to-day! throat and lungs much affected—conjunctiva highly injected—cough bad—sputa, bloody—crepitatus—pulse 150, respiration 19. March 10: Severe symptoms increasing. March 12: Delirium—prognosis very unfavorable. March 13: Symptoms more aggravated—moribund.*
Recovered Nov. 5.	22 *days.*	*Was called Oct. 15—patient had had slight premonitory symptoms "a week or ten days"—tongue dark, coated and dry—much general uneasiness and lassitude—pulse full—respiration easy and quite normal—exhibited hydragogue cathartic. Oct. 20: Less restless—tender on abdomen—tongue clean, red, and more moist—sordes. Oct. 28: Abdomen tympanitic—slight petichiæ on epigastrium—dozy and dreamy—respiration more hurried—costiveness and dysury. N. B. Urged* vigilance *and* faithfulness *in the nurse. Oct. 25: Severer symptoms abating. Oct. 26: Convalescent. Oct. 29: Able to go out, but advised rest from business a week.*
Died Nov. 16.	11 *days.* 8 *days.* 3 *days.*	*Accident Nov. 5th, when first seen. The brain protruded on the third day—symptoms were very favorable up to the 10th day, when lock-jaw supervened. He died on the 11th day. The brain, after death, was a diffused bloody mass, down to the corpus striatum.*

XXI. Extracts from Communications of J. D. B. De Bow, Esq., and Edward H. Barton, M. D., of New Orleans.

We accord to Louisiana the honor of being the first state to establish a *Bureau of Statistics;* and we desire that her excellent example may be imitated by all the other states in the Union. We have received from J. D. B. De Bow, Esq., the Superintendent of the Bureau, a communication dated in January last, "Introductory to the First Report," and also a letter addressed to him by Dr. Edward H. Barton, of New Orleans, favorably known for his sanitary labors, from which we make the following interesting extracts :[1]—

Professor DeBow says,—In investigating the numerous topics connected with population our progress is almost entirely impeded by the total neglect of nearly every species of record existing among us. Careless, as has been our course in regard to the statistics of wealth, we have been infinitely more careless in those that pertain to life and mortality. In vain has the importance of a registration system of births, marriages and deaths, been pressed by Statisticians in every

[1] We acknowledge the receipt of valuable communications from the Boards of Health, or other city authorities, of New York, Philadelphia, Baltimore, Washington, Charleston, S.C., Savannah, New Orleans, and St. Louis. We extract the following regulations of the Board of Health of Washington. In that city and in New Orleans annual reports are required to be made, by the Board of Health, of such matters as come under their consideration.

"That, from and after the promulgation of these regulations, all clergymen be requested to furnish, on the first day of every month, to the Board of Health, returns of all persons married by them during the previous month, and that these returns be made by a certificate after the following form :—

Washington, ———, 18—.

I hereby certify, that the following persons were married by me during the month of ——:

Date.	Names of parties.		Ages.		Occupation.		Color.	Nativity.		Length of residence.	
	Male.	Female.	Male.	Female.	Male.	Female.		Male.	Female.	Male.	Female.

To the Board of Health. Rev. ——— ———.

That, from and after the promulgation of these regulations, all physicians, surgeons, and others, who may be engaged in the practice of midwifery, be requested to make to the Board of Health, on the first day of every month, returns of the number of births which have occurred in their practice during the preceding month, and that their returns be made by certificate of the following form :—

Washington, ———, 18—.

I hereby certify, that the following births have occurred in my practice during the month of ———:

Date.	Names of parents.	Nativity of parents.		Length of residence.		Sex.	No. of children.	Color.	Slaves	Remarks.
		Male.	Female.	Male.	Female.					

To the Board of Health. ——— ———, *Accoucheur.*

That, from and after the promulgation of the regulations, no Sexton shall receive, or permit to be received, within the grave-yard under his care, a body for interment, without first

part of the Union, by committees of medical associations, by the late National and State Medical Convention, &c. The public mind will not be brought to an appreciation of its value and influence. Massachusetts still remains the only State in the Union which has *successfully* set up such a system, in imitation of Great Britain and others of the more advanced European powers. Several of our states have evinced a disposition to be active, and New York, it is believed, has even passed a registration law. In Louisiana, at different periods, we have had enactment upon enactment. That of 1811 makes the parish judges, recorders, with a special recorder in New Orleans. The act of 1819 fixes a penalty for not recording in New Orleans. There have been several other legislative provisions, but what have been the practical results of the whole?

It is scarcely necessary to remark that our *registration system* has been entirely inoperative for any of the purposes advocated by vital economists. Louisiana is peculiarly interested in health and mortuary statistics, as it is believed that no state in the Union has suffered more from erroneous impressions, and misrepresentations that have gone abroad, which we ourselves have not the means to correct. Were the facts even against us, a faithful exhibit of them would tend in the result to improve our sanitary condition. The experience of all countries preserving such records, shows a marked amelioration of society, diminution of disease and extension of the average period of life. The physical condition of man has improved in equal pace, with a knowledge of the causes affecting him, and their degree of intenseness in different localities. There can be no question either, that "the white, black and other races, present peculiar, moral and physical characters, which should not be overlooked by the statesman, whose legitimate aim can only be the prosperity and happiness of all nations." We are strikingly deficient in knowledge of the black and colored population, although living among us for nearly three hundred years. Investigations, notwithstanding their importance, have never been made in this field until within a very few years. Is it true that the negro is long lived at the south and the reverse at the north, whilst the mulatto is always short lived, and never prolific? Is not the real merit of the slave question involved in the *physical characteristics* of the races, and in discussing it, are not the facts of births, average

having obtained a certificate, which must be in the following form, and signed by the attending physician, clergyman, member of the family, or some respectable person:

WASHINGTON, ———, 18—.

The undersigned hereby certifies that a —— —— died on the — instant, on — street, in this city, named —— ——, occupation ——, a native of ——, a resident of this city, for — years, aged — years — months — days; married ——

Cause of Death.	*Duration.*
Primary disease . . . ———	——— days.
Secondary disease . . ———	——— days.

——— ———, M. D.
——— ———, Clergyman.
——— ———, &c.

Interred in ——— burial-ground, ———, 18—.

——— ———, Sexton.

Which certificate must be countersigned, and returned by the sexton, with the name of the burial-ground in which the body is interred, and the date of interment, on the first day of the succeeding month. A failure to conform to this regulation will subject the offender to the penalty provided by the law of the Corporation, which the Board of Health are determined to enforce.

lives, diseases, longevity, deaths, increase, vital force, &c., respectively at the north and the south in freedom or in slavery, equally if not more important and decisive than the admonitions of St. Paul or the laws of Moses? We want facts, full, minute and reliable, upon every feature of this subject?

Dr. Barton says:—There can be no known advancement without we are first made acquainted with our actual condition. The discovery of an evil must always precede its removal, and however we may close our eyes, it still exists, drawing compound interest from our neglect. All this has been so eminently proved in relation to this city, that I only need to hint a few of the facts to your intelligence and the whole truth will start from the canvas in the most glaring colors. The United States census takers for 1840 gave us a population of about 27,000 more than we actually had; but as the mortality was not added to in a similar ratio, it made us, by the Bobadil method of computation, the healthiest city in the Union. And some of our writers have since calculated our mortality as one in fifty-eight, a ratio of salubrity far exceeding any city in America, and probably in the world! while our actual mortality is more than double that. You see then that a mis-statement is as bad, nay, worse, than none, for here is an *official statement* presumed to be entitled to confidence, from which, deductions have been drawn of our actual situation. Had the *facts* been known and constantly so for thirty or forty years back, of the real mortality of this city,—and you know how much I have labored to procure them for the last fifteen years,—it would be a poor compliment to this intelligent people to suppose that the *causes* of that mortality would not long since have been investigated, pointed out and remedied, and the city would now be in the enjoyment of the salubrity it only had through a fiction.

The importance of a knowledge of the health of a community is only second to the health itself. The amount of information from reliable sources that exists upon this subject in America is exceedingly small; in fact, out of the large cities, Massachusetts excepted, and presently New York, there are no statistics of the sanitary state of the country anywhere to be found, excepting detached monographs in the medical journals, nothing really but prejudiced assertion; and this assertion is, *pro* and *con*, either of them widely separated from the truth. Massachusetts has set a noble example in obtaining the actual truth throughout her domain yearly, not only of the sanitary condition, but of the births, marriages, manufactures, agriculture, &c.; in fine of every thing which it concerns the community to know. Her advancing, retrograde, and relative condition, can thus always be known. Suppose each state in the Union had done so since the establishment of our independence, of what immense importance it would have been to the country. We should not then have seen the finest advantages of health and wealth that the God of nature offers to the industry of man hidden from the public view for want of exposure and development, while our valuable population,—the best in the world,—is scattering itself to the ends of the earth in search of what could so readily be found so near our own doors.

The general information in relation to the health of particular sections of our Union are entitled to very little reliance; the specific

facts which properly claim confidence do not exist, and it will doubtless be a long time before the states will authorize them. I stated above that such information was confined to the large cities, I might have added, to the large cities of the seaboard. In the West,—in Pittsburg, Cincinnati, Louisville, St. Louis, the interior everywhere,—there are, so far as I have been able to ascertain, by actual visits and an extensive correspondence and inquiry, no records at all! As to the entire south, there are very few. In Maryland one, (in Baltimore,) throughout Virginia one only, (at Norfolk,) in the Carolinas one, (and an excellent one, at Charleston,) in Georgia one, (at Savannah,) in Alabama one, (at Mobile,) in Louisiana one, (at New Orleans,) in Mississippi one, (at Natchez,) in their interiors, none! None in the entire west, so far as I have been able to ascertain!

One of the first inquiries which should be made of a country, when one thinks of visiting, trading with or settling, is in relation to its health. Various parts of the United States are avoided on account of supposed insalubrity, as part of this state, when it is now well known to us that those very portions are amongst the healthiest in the Union. And again, all agricultural countries are sickly when first opened and settled, and become healthy soon after the country becomes cleared, cultivated and subdued to the purposes of man. Such is eminently the fact with regard to the long settled parts of the southern states, while countries and cities supposed to be healthy have been found by examination and statistical records to be far the reverse.

But this is not all. Various parts of our widely extended country have their special liabilities to particular forms of disease. Individuals and their families have also their predispositions to special afflictions. These peculiarities can be worn out and gotten rid of entirely by removing from one part, where they are very liable to occur and do produce great mortality, to other portions where they are almost unknown. For instance, there are some portions of our country where pulmonary affections are very rare, and particularly consumption, and other portions where they take off near twenty-five per cent. of the entire mortality. A knowledge of this fact is of the last importance to individuals and families who have inherited the phthysical diathesis, and so of many other forms of disease which I need not specify. Then, again, countries change in their liabilities to particular diseases, and these facts can only be made known through accurate records worthy of confidence, at successive periods.

The importance of a registry law to a political community may be compared to the value to an individual knowing the state of his health and of his affairs; a man who takes no note of these may be ruined before he knows it. So a body politic, that is ignorant of its condition,—of a prosperous or adverse state of its affairs, of what may advance the one or remedy the state of the other,—may be actually retrograding while it is supposed to be thriving, and may be suffering while in reach of all the gifts of fortune. This would be the more obvious if this was the general belief throughout the world, but the state of foreign and conterminous countries is constantly being made known, constituting statistical information; the wants and the sources of supply are constantly being published and the balance struck;—in fact, the limit to the advantages of a people becoming acquainted

with their condition, is about as boundless as the wants of man, for thus only can it be bettered, (about as strong a feeling in America as in any other,) and some may extend it to all human knowledge, and a reference to the relative condition of nations will show that their prosperous or adverse condition,—indeed, their elevation in the scale of intelligence,—is in a great measure dependent upon an enlightened knowledge of their own condition and wants, and of those of other parts of the world whence they may supply them.

This kind of knowledge of our actual condition, and the short step resulting to the development of our capacity, is more wanting in the south than in any part of our widely extended country. And how much has she lost and is losing politically, and in every element of prosperity, from a want of a suitable knowledge of her condition and capacity? With the best climate, the richest soil, the finest water power, and mineral wealth inexhaustible, she constantly sees her poorer and less advantageously situated sisters in the inhospitable climates of the north, far outstripping her in every element of wealth, prosperity and power. It is a sacred duty we owe to ourselves to aid in every way to develop our resources, to exhibit the true sanitary condition of our country, and the immense advantages the south offers to the emigrant to add his stores to ours, and with united industry to make her fair fields the very garden of the confederacy. One of the most important is to remove the bugbear in relation to the effect of the climate on health, the actual facts of the ratio of death to population. The average of death and the small portion of time embraced in the confinement of sickness in the interior of this state would stagger credulity, as might be made apparent, were this the place to publish some tabular statements, I have prepared (for another purpose) to exhibit the comparative health and longevity of our people, and the larger proportion of population we possess of the productive age than of any country known. Some years ago, when the Legislature of Louisiana were about authorizing a geological recognizance of the state, I suggested that a medical commission should be added to procure the facts, (so far as they could be had,) of the relative sanitary condition of every portion of the state, but it was not adopted. I then suggested that it should belong to the now merely nominal office of Surgeon General of the State, and that it should be made his duty to visit every part of the state biennially, as under the old constitution it was made the duty of the governor, (most unwisely repealed in the new,) and obtain all the information accessible in relation to the salubrity of the country, and report the same to the Legislature for publication; but all modes sink into insignificance when compared to a registration law, such as is adopted by that enlightened state, Massachusetts, who has set an example worthy of being followed by the other states of the Union, and to none is it more important than to this state, which has suffered more than any other from the reputation of perennial insalubrity, and is probably least deserving of it, (New Orleans excepted, where most of the causes are very obvious and removable.) Louisiana has acquired distinction in having been the first state to establish a Bureau of Statistics, which you have so much contributed to render useful. She would establish her claim to one of much more substantial utility, were she to enact a suitable registration law, through which

her general salubrity and the incalculable sources of wealth and prosperity which she offers to the enterprising and industrious, could be published to the world.

XXII. Sanitary History and Condition of the County of Franklin, in Massachusetts.

[The following article is compiled from a valuable communication made in 1842, to the Massachusetts Medical Society, by Stephen W. Williams, M. D., of Deerfield.]

In 1735, the scarlet fever, which so extensively ravaged the coasts and interior towns in New England, and was so fatal as to be called "the plague among children," prevailed in Franklin County to a considerable extent. It was again rife here in 1742. The winter of 1740–41 was the coldest ever known in America. A great many cattle perished from scarcity of fodder. Sickly seasons have often occurred after severe alternations of weather. I have no very accurate data upon which I can absolutely depend in relation to the dates of epidemic diseases here for a considerable period of time. As nearly as I can obtain information, the measles and canker-rash prevailed here in 1750. The dysentery prevailed here in 1751. The canker-rash was also prevalent here in 1756. The lung fever, as it was called, prevailed here in 1775.

In 1777, the small-pox prevailed in the town of Deerfield, and a pest-house, or hospital, was established in a remote part of the town. It was supposed that it originated or was taken from some of the troops of the American revolutionary army, as they were often passing through this town, and as that complaint was almost constantly prevalent among them. The dysentery also prevailed extensively here at the same time, and also at Greenfield, Shelburne and Conway. At the latter place there were 73 deaths from it that season. Conway, at that time, could not have contained more than 1000 inhabitants. Willard, in his History of Greenfield, says, "In 1777 a great sickness prevailed here (Greenfield) and at Shelburne; fifty died in Greenfield, and eighty at Shelburne." The population of Greenfield at that time was, probably, about 900, and of Shelburne, about 700; so that it, indeed, might be called "a pestilence which walked at noonday." The canker-rash prevailed extensively in Deerfield, and in some other towns in this county, from 1792 to 1795. Intermittent fevers also prevailed in Deerfield about the year 1794, in consequence of the erection of a dam across Deerfield River at Stebbin's meadow. This complaint had prevailed extensively in this town for several previous years, but in consequence of the drying up of the marshes by cultivating the soil, no cases have originated here since the commencement of the nineteenth century. In 1789, 1790, 1791 and 1792, the scarlet fever and canker-rash prevailed at Rowe. The canker-rash prevailed in Hawley in 1794 and in 1830. It also prevailed in the adjoining town of Plainfield in 1794, and in Buckland, to a considerable extent, in 1838. The dysentery prevailed extensively in Warwick in 1822 and 1824. Eleven died of this complaint in the former year and sixteen in the latter.

In 1802, the malignant epidemic dysentery prevailed at Greenfield and in Shelburne. The population of Greenfield at that time was not far from 1300. The whole number of deaths there that year was sixty-eight,—fifty-seven died of the dysentery, and most of these were young people. The population of Shelburne at that time was not far from 1100. Thirty-four died that year in that town. The dysentery also prevailed extensively at Springfield. The mortality was so great that season from the dysentery, in Greenfield, that the stores were generally shut, and business of almost all kinds was suspended. There were scarcely well people enough to take care of the sick. Travellers avoided the place as much as possible; and many who passed through the town tied mufflers over their faces to prevent inhaling infectious matter. Several families removed from the town, and particularly their children. Willard says, "One hundred and one persons went away to other places in consequence of the sickness; and at one period there was not an inhabited house in the place where there was not one or more sick or dead. Five coffins were made on one Sabbath day alone! Some families lost five, some three, and some lost all their children. The first death occurred July 18th. Doctors Wells and Stone attributed the sickness to a scarcity of fruit, so necessary in hot weather to correct the bile, and to a putrid atmosphere occasioned by a great flood in June, that left stagnant water on the low lands, which by the intense heat of the weather, and being blown hither by the southerly winds, affected the air so sensibly that its insalubrity might plainly be perceived by any one walking abroad in the evening." On the 16th of August the wind blew up from the northwest, the rain fell copiously, the heat was mitigated, and most of the sick were recovering.

In the spring of 1803 the measles prevailed at Deerfield as an epidemic. It was followed in the summer by one of the most severe and mortal dysenteries which ever prevailed in this part of the world, in proportion to the number of inhabitants. It prevailed also in Conway and Northfield almost to as great an extent as at Deerfield, and likewise at Northampton, in the county of Hampshire, about sixteen miles south. I am not able to obtain the number of deaths in the two latter places from it, but in Conway the whole number of deaths in 1803 was eighty-four, sixty of which were from the dysentery. Conway then contained not far from two thousand inhabitants. Why it should have prevailed in Greenfield, Shelburne and Springfield, and not in Deerfield, Conway, Northfield and Northampton, the same years, is to me inexplicable, The weather in 1803 was hot and sultry, attended with a great many very severe thunder showers. It commenced at Deerfield in the month of June, much earlier in the season than that complaint usually begins, and did not terminate till after the severe frosts in November. What was very singular was, that almost every patient who was attacked with the dysentery, after having had the measles, died of that complaint. The disease in Deerfield was confined principally to the main street, then containing, probably, about three hundred and fifty inhabitants. There were but few cases in the remote parts of the town. The number of inhabitants that year in the whole of the town was, probably, not far from 1400. There were sixty-five deaths in this town that year; and fifty-four, at least, of these were

from the dysentery. As in Greenfield the year before, whole families sent their children abroad, and but few of them, who were thus sent away, were attacked with the complaint.

When we reflect that the disorder did not spread much out of the main street, and that it was confined almost to a population of not over five hundred, we come to the conclusion, that it was almost as fatal as the yellow fever in Philadelphia, in the year 1793, in proportion to the number of inhabitants. Its ravages were more fatal among infants than adults. It was not uncommon to see two and sometimes three funerals a day in one street, for several weeks in succession. It was of a very malignant and typhoid character, and seemed to yield to no remedies.

In the latter part of the summer and beginning of the autumn of 1807, the *spotted fever*, as it was then called, prevailed at Deerfield and at Greenfield. It commenced in a poor family at the west part of the town of Deerfield, in an isolated situation. There were various opinions as to the origin of it. Many supposed that one of the inmates of that family brought the disease from Hartford, where he had recently been, and where it was said the complaint prevailed. He had the disease rather lightly and recovered. Others believed that it originated in the family, which was dirty and poor. The house was old and the floor loose. It was said that they were in the habit of raising a board in the floor, and throwing the offals and bones of their meals under it, and leaving them there to putrify. I shall not undertake to decide the question; but certain it is, that several of the family had the complaint, and died in quick succession.[1] Soon after, the disorder made its appearance in a neighboring family about a hundred rods off. Both these families, and all in which the fever prevailed, lived upon the side of a gently elevated mountain several hundred feet above the bed of Deerfield River, and in almost isolated situations.

To show the rapidity of the action of the complaint, I will mention the fact that my father was attending upon an obstetric case in that neighborhood, when one of the attendants, an aged lady, was taken unwell and went home. She grew worse and sent for him, but he could not be spared. He went to her as soon as he could be released, which was in the course of an hour or two. When he arrived the old lady was in the agonies of death, and she very soon expired. Very soon after, a little grand-daughter of the old lady was attacked in my father's arms, with the same complaint, and in a few minutes it died. While the attendants were laying out the old lady and child, the mother of the child, and daughter of the old lady, was attacked with the same complaint, and in less than twelve hours from the first attack of this fever in this family, the grandmother, the mother, and the grand-daughter, lay corpses in the same room! The complaint spread in a few families, when it was arrested, and never more made its appearance there. A few cases of it, however, occurred at the north-west part of the town, in Greenfield, and in various other parts of the county the next year, and was quite mortal. It soon subsided, and

[1] "The origin of the spotted fever which prevailed here in 1806, was traced to animal and vegetable putrefaction, and a want of proper attention to cleanliness in the families in which it prevailed. Its destructive ravages was confined principally to these families."—*See Holmes's Dissertation, p.* 90.

afterwards, for a few years, we had only a few scattered cases. It prevailed, however, in Worcester county, and several other parts of Massachusetts, with a good deal of violence. Since then there has been but little of it in the State.

Early in the winter of 1814, a malignant epidemic commenced in this county, and prevailed in most of the towns in it, and in fact throughout the country. The common name for it was lung fever, war fever, &c. The technical name for it was pneumonia typhoides, but perhaps it was erroneously so called, as many of the patients had no affection of the lungs at all. The fever originated in the army on the western frontier in the year 1812 or 1813, and, on that account, it was by many called the war fever. This complaint was confined almost exclusively to old people; and it is a fact worth noticing, so far as my observation extended, not a person over sixty years of age ever recovered from an attack of it. It was extremely mortal, and the symptoms rapidly ran on to typhus, and speedily terminated the life of the sufferer. Twenty-eight people died in the town of Deerfield, in the short space of two months. As the weather grew mild the complaint in some measure subsided. A few scattering cases occurred in 1815.

In 1831 and 1832, the scarlet fever was very prevalent in Greenfield, Deerfield, and various other parts of the county; and it will be seen by observations which I have made a short time since, that it has prevailed in scattered cases throughout the county both before and since. In some towns it has even prevailed as an epidemic. In the above-mentioned years, and in some others, it assumed a very malignant character. It was confined very generally to children. In 1831 there were fifty deaths in Deerfield, principally from this complaint.

In 1831, the typhus fever, according to Dr. Dorrance, prevailed extensively in Sunderland. This town, lying on the east bank of the Connecticut River, then contained about seven hundred inhabitants. The town had been unusually healthy up to this period, when, in the early part of winter, the scarlet fever and hooping cough prevailed extensively there. Soon after, typhus fever commenced, and, up to November, sixty cases occurred in that neighborhood. Six weeks after, the same fever again commenced and spread rapidly, until "one hundred, principally in the village of fifty houses and perhaps three hundred inhabitants, were the subjects of it. Of three hundred cases, nine proved fatal." Fevers of a typhoid character have prevailed sporadically, and in some cases almost as epidemics, in various parts of the county at different times, and what is very astonishing, within a few years they have been more prevalent upon our elevated mountains than in the valleys.

The dysentery prevailed in several towns in this county in the year 1841. The season had been unusually dry a long while before, and the first cases which occurred came on about the first of August. It seemed to follow the courses of streams, and was most severe in the towns of Deerfield and Greenfield. There were nearly one hundred cases in each of these towns, and these were confined almost exclusively to the town streets, so called, in both these places.

These are the principal epidemics which have prevailed in the county to any great extent, so far as I can ascertain. Undoubtedly

some have been overlooked, for the want of more precise information. The most prevalent complaints in the county are pneumonic affections, which often terminate in consumption; fevers, principally of the typhoid character, especially upon our mountains, and particularly in the cold months. Croup is a common complaint among infants, especially in the valleys. Bowel complaints, such as diarrhœa, dysentery, cholera morbus, &c., prevail in summer. I cannot enter into a detail of our complaints, but must refer to the subjoined bills of mortality, for many towns in the county, for particulars. (*See table, p.* 420.)

It has been questioned by some whether pulmonary consumption is actually on the increase in the county, or not. In some towns it will be perceived by reference to the tables, that it is increasing among us, while in some, perhaps, it is not. In the town of Deerfield, for instance, with an average population for 55 years of about 1500, there have been 144 deaths from it; while in Conway, an adjoining town, for about the same period and about the same number of inhabitants, there have been but 76 deaths from it. Some of my correspondents in the western part of the county say it is certainly on the increase with them. Dr. Gould, of Rowe, says, there were in that town ten deaths from it in one year. This, however, was a very uncommon and in fact a solitary instance. In the town of Greenfield, I understand, with a much larger population, there were a few years ago, two years without a single death from this direful complaint. This is as singular as the fact in relation to Rowe. As nearly as I can estimate, about one sixth of the deaths in this county are from consumption.

Ashfield.—Deaths in Ashfield for 29 years, from 1808, 645. Average 22 a year and fraction. One death in about 80 inhabitants; 2 over 100 years of age; 3 between 95 and 100; 5 between 90 and 95; 30 between 80 and 90; 42 between 70 and 80; 69 of consumption, since 1819.

Barnardston.—Of 394 deaths 79 were over 70 years of age. There have been 11 deaths over 80 years of age since 1832. Between 20 and 70, there have been 143 deaths since 1810 to 1841. Under 20 years, 169. In 1832, there were 24 people living in Bernardston over 70 years of age. The whole averaging 77½ years. There were 9 over 80, and 1 above 90. Two people have died in this town over 98 years of age.

Henry W. Cushman, Esq., of Bernardston, has furnished me with the following facts, an abstract of which he published in the Franklin Mercury in 1833. The whole number of deaths in the town in the last 21 years is 252, or 12 per annum. Assuming 900 as the average population of the town for the last 21 years, which is nearly the fact, only one in 75 have died annually. Of these 252 deaths in 21 years, previous to 1831, one was 98 years old; 3 over 90; 19 over 80; 37 over 70 years. Four tenths of the whole number were under 10 years of age. Greatest number of deaths in 1828, when 26 died. Least in 1811 and 1817, four each year. In the year 1830, the population of Bernardston was 945. On the 7th of January, 1832, there were 24 persons alive over 70, and 9 over 80 years of age. The average of the 24 persons was 77½ years. Of these 24 persons, only four are now (1841) living. In 1831, five persons died of the follow-

Statement of the population and deaths, at different periods, in the County of Franklin, and the proportion the annual number of deaths bears to the population: compiled or deduced from the facts in Dr. Williams's communication, and from other sources of information.

Towns.	Population.		Deaths.				Proportion.	
	Number.	Date.	Period.	Years.	Whole number.	Annual number.	In 100.	1 in
Ashfield, -	1748	1820	1813–1824	9	203	22.6	1.29	77
" -	1732	1830	1826–1835	10	231	23.1	1.33	75
Bernardston, -	912	1820	1816–1825	10	125	12.5	1.37	70
" -	918	1830	1826–1835	10	136	13.6	1.44	69
Buckland, -	1039	1830	1826–1835	10	173	17.3	1.66	60
Coleraine, -	1971	1840	1838–1841	4	120	30.0	1.57	64
Conway, -	2092	1790	1786–1795	10	221	22.1	1.05	95
" -	2013	1800	1796–1805	10	167	16.7	.82	121
" -	1784	1810	1806–1805	10	214	21.4	1.19	83
" -	1563	1830	1822–1834	10	223	22.3	1.42	70
Deerfield, -	1330	1790	1787–1793	7	68	9.7	.72	137
" -	1531	1800	1796–1805	10	152	15.2	.99	100
" -	1570	1810	1806–1815	10	218	21.8	1.39	72
" -	1868	1820	1816–1825	10	176	17.6	.94	106
" -	2003	1830	1826–1835	10	253	25.3	1.26	79
Gill, -	762	1810	1806–1815	10	102	10.2	1.34	74
" -	800	1820	1816–1826	10	135	13.5	1.68	59
" -	864	1830	1826–1835	10	131	13.1	1.51	66
Greenfield, -	1254	1800	1795–1805	10	127	12.7	1.01	99
" -	1165	1810	1806–1814	9	121	13.4	1.17	85
" -	1361	1820	1817–1825	9	145	16.1	1.19	84
" -	1540	1830	1826–1835	10	168	16.8	1.09	91
Heath, -	1122	1820	1817–1826	10	115	11.5	.97	103
Northfield, -	868	1790	1786–1794	9	72	8.0	.92	108
Rowe, -	575	1800	1796–1805	10	112	11.2	1.94	52
" -	851	1820	1816–1825	10	181	18.1	2.12	47
" -	716	1830	1826–1835	10	149	14.9	2.08	48
Shelburne, -	995	1830	1828–1832	5	63	12.6	1.26	79
Whately, -	736	1790	1786–1795	10	93	9.3	1.27	79
" -	773	1800	1796–1805	10	94	9.4	1.21	82
" -	891	1810	1806–1815	10	136	13.6	1.52	65
" -	1076	1820	1816–1825	10	128	12.8	1.17	85
Total, -	40,423			302	4,752	15.7	1.17	85

ing ages, 92, 76, 73, 79, 88. The deaths in Bernardston for 30 years past, have averaged one and a third per cent. of the population annually. Consumption of the lungs is a disease of rare occurrence in this town.

Buckland.—Dr. Trow remarks that he can learn of no epidemics of a remarkable character. "The greatest mortality in the town mentioned was in 1832, when typhoid fever prevailed, of the same character which it now assumes. A few individuals have lived nearly to the age of 100 years, but as far as I can learn, none have exceeded that age. There are a large proportion of pneumonic affections, and consumption is evidently increasing. Cynanche trachealis is rare, but it sometimes occurs. Bronchocele is very common. Bilious affections, colic, diarrhœa, &c., are extremely common. Inflammation of

the abdominal viscera, also, and especially of the mucous membrane during the fall. Diseases of the brain, spinal cord, apoplexy, inflammation, paralysis, are also frequent. Scarlatina prevailed as an epidemic in 1838. It showed itself in numerous cases, in all its forms, from the most simple to that of the most alarming severity; in one case producing death in six hours from the first attack, and in another, madness, equalling in severity, in a few hours, that of the most severe cases of hydrophobia. Diseases of the urinary and genital organs are not uncommon in this vicinity." Average deaths in Buckland, 17 and 2 tenths a year.

Coleraine.—Dr. Deane says, "I have no means of ascertaining the proportion between old and young, or of the different diseases, but probably there are many more young than old. I think the number of consumptions may be about one in eight. I can recollect no particular mortal epidemic. Dysentery has prevailed some seasons, but not to any alarming extent, and also typhus fever as an epidemic. Dysentery has prevailed some seasons, but no record has been kept of the number of cases from that disease. I am inclined to think that more deaths occur from lung fever, or inflammation of the lungs, and dropsy of the chest, than from all other diseases that prevail in Coleraine. We have but few remarkable instances of longevity in this town. One man died in 1813, aged 100. One in 1826, aged 101, whose health had been remarkable through life. He died in April, and had been able to chop his fuel through the winter. I was called to him in his last sickness, which was lung fever; and it was remarked by his son, with whom he lived, that I was the first physician ever called to his father. We have now living in town, 57 persons between 70 and 80; 31 between 80 and 90; and 1 between 90 and 100."

Conway.—The first case of consumption occurred in 1792, as recorded. Since then there have been 76 deaths from this complaint. In the 71 years, in which the record has been kept, since 1770, there have been 54 deaths of people between 80 and 90, and 27 between 90 and 100; one at the age of 99; 2 at 96, and one over 100. It appears by the record, that the dysentery must have been unusually malignant and severe in the year 1777, and in 1803. Five have died of spotted fever and two of cancer. Average deaths 20 and 4 tenths a year. Average deaths in 50 years, one in 80 and 2 tenths.

Deerfield.—Eleven hundred and fifty-four deaths in 55 years. Average 20 and a fraction a year. One death in 86 and a fraction. Between 95 and 100, 4; 20 over 90; 80 over 80; 233 over 70; 284 between birth and 4 years. Almost one quarter of the 1150 died over 70 years of age.

For the first 49 years there died of fits, 44; fever, 49; dropsy, 20; pleurisy, 13; palsy, 13; canker-rash, 30; lung fever, 24; accident, 17; drowned, 20; suicide, 2; homicide, 1; killed, 1; child-bed, 6; Angina Pectoris, 6; hydrocephalus, 12; insanity, 2; burns and scalds, 8; croup, 14; apoplexy, 7; cancer, 8; colic, 13; old age, 61, &c. In 55 years, there have died of consumption 144, of dysentery, twice epidemic, 82.

Gill.—In the 36 years nearly, there have been 25 over 80, one over 90, one 99, one over 100. Over 70, 83. 10 and under, 166, including still-born. Consumption, 53. Average age, 63½. Dr.

Lyons, in his letter to me, observes, that "the most prevalent disease, since the commencement of 1813, has been, what we now call, lung fever. Previous to that time, up to 1806, and several times since, dysentery has prevailed, but not as a general epidemic; however, bowel complaints in children, and affections of the lungs, are the most common, and gastric fevers in adults; whilst lung fever claims old people for its victims." Average deaths in Gill in 36 years, from 1806, 12 a year. One death in about 60 and 5 tenths.

Hawley.—Gen. Longley observes, that "it appears, for 32 years, commencing with 1800, the average deaths in Hawley was 10, a fraction over one per cent. For eight years, commencing with 1832, the average of deaths was 14 in a year. In 1839, the deaths numbered 21, 18 of whom were adults, several between the ages of 80 and 90 years, three in one family. The most prevalent complaints, according to Dr. Smith, are inflammatory." The canker-rash prevailed in Hawley in 1794, and in 1830. There have been a few mortal cases of spotted fever. The consumption is considered more prevalent than 30 years ago. Three have died between 95 and 100, one nearly 99, 4 between 90 and 95. Of 14 who have died in Hawley, their ages amount to 1248. There are now living in Hawley, several people over 90 years of age, among the rest, Edmond Longley, Esq., 95 in November, 1841. There are now living 12, the sum of whose ages is 1064.

In 1809 there were 11 deaths; 6 of peripneumony; 1 infant; 1 laudanum; 1 Angina Maligna. In 1810 there were 12 deaths; 1 old age; 1 peripneumony; 3 typhus; 3 dropsy; 2 spotted fever. In 1811 there were 14 deaths; 2 apoplexy; 2 consumption, &c. In 1812 there were 9 deaths; 1 hydrocephalus; 1 hydrothorax; 2 peripneumony. In 1813 there were 10 deaths; 1 peripneumony; 5 infants; 3 typhus fever. In 1814 there were 4 deaths; 1 scrofula; 2 infants; 1 typhus fever. Average in 41 years, 11 and 2 tenths. One death in 92 and 7 tenths.

Heath.—The whole number of deaths in Heath, from 1817 to 1829 inclusive, is 150. Of whom 20 died of consumption, 20 of dysentery, and 12 of pneumonia and pleurisy. Old age, 15. Dyspeptic and liver complaints, 6; fevers, 5; dropsy, 6; jaundice, 2; croup, 3; cancer, 3; puerperal fever, 3; phrenitis, 4; hooping cough, 3, &c. From 1785 to 1841, there have been 10 deaths of people over 90 years of age, one 96. From 80 to 90, there have been 41 deaths; from 70 to 80, 33. Average 11 and a fraction a year.

Dr. Emerson observes, that "genuine typhus fever is hardly known in this town. Other kinds of fever not inflammatory are as rare as typhus. Bronchocele is very uncommon. A few sporadic cases of dysentery occur every year in the hot seasons, and they are for the most part easily manageable. A number of fatal cases occurred during the years 1824, 1825, 1827 and 1828. Cases of croup happen here every year, but whether the disease is more frequent than in the towns on Connecticut River, I have not the means of determining. Perhaps a fatal case has happened as often as once in six years. Consumptions are frequent, and certainly not on the decline. Of those noted as dying of old age, a majority, perhaps, were affected with catarrhal complaints, or diseases about the heart, or kidneys, or urinary organs;

indeed death simply from old age, or a universal and equal decay of the powers of life, is, in my experience, a rare occurrence."

Leyden.—Dr. Wilkins observes, that, of 98 deaths, 32 were over 70, 12 between 70 and 80, 19 between 80 and 90, one 97. He says, that he cannot ascertain for a certainty that any person has died in town over 100 years of age; although, three or four have died here, whose ages would not vary much from that. "One of our inhabitants tells me that he is quite confident that two of the number were over 100. There are now living, in Leyden, 33 persons between 70 and 80, 12 between 80 and 90, and one between 90 and 100—William Dorrell, of wooden shoe notoriety. About one fourth of the deaths were from consumption, for the most part between the ages of 18 and 35, at which period of life there seems to be a greater predisposition to that disease. Four or five cases were accidental."

Northfield.—Of the 226 deaths, from 1750 to 1794 inclusive, 95 were infants, from 8 years of age downwards. One person died in Northfield, in 1840, over 100 years of age. In the above record, 2 died between 90 and 95, and 3 between 95 and 100. Rev. Mr. Hubbard was pastor of the church, from 1750 to 1794, and kept the above register. Of the deaths recorded by Mr. Hubbard, there were from accident, 1; apoplexy, 2; killed by Indians, 2; burn, 1; consumption, 13; child-birth, 7; cancer, 1; dropsy, 1; drowned, 2; colic, 1; epileptic fit, 1; fever, 1; measles and putrid fever, 1; palsy, 2; rattles, [*croup*,] 5; small-pox, 1; worms, 2.

Rowe.—Average number of deaths 10 and 8 tenths a year. Three deaths over 100, one 106, and two 101, 6 between 80 and 90. Living, 3 between 80 and 90, 3 between 90 and 100. Dr. Gould observes, that "the person who lived to 106 years of age, was grandmother of Deacon Thomas of this place. Her husband died at 83. Their son, father of Deacon Thomas, died at 92, a sister at 86. A brother of Mrs. Thomas lived to 107 full years. His name was Matthew Watson. He died in Barrington, R. I.

The deaths, according to population, agree nearly with those in Deerfield. The proportion of deaths, the latter part of the time, is less among children than adults. I account for this from the fact, that there are born yearly, not more than a third as many children now, as in the early settlement of the town. Then the people, the first settlers, were young and prolific. Now the young leave us, in the pursuit of other homes, and none but the barren and unprolific are left behind."

I cannot do better in this place than to give the following excellent letter of Dr. Gould, on this subject, in reply to some queries which I propounded to him. I inquired of him whether fevers have prevailed more in winter than in summer? In reply, he says, "My observations extend only eight years. My answer to this interrogatory is, that fevers are much more prevalent in summer than in winter. It is seldom that I see a case of fever in the winter season. I do not now recollect a single case, though it is very possible there may have occurred cases during the time of which I write." Has typhus fever prevailed at all in Rowe? "I answer, that since I have been in Rowe, I have not seen a single case of typhus fever. Certainly not one, if we take Dr. Smith's definition." Do you have any cases of real croup? "I have seen but one case, which I considered real croup,

since I have been here. I have reason to believe a child died last year with it, under the care of another physician. My case recovered." Have not consumption, pneumonia, bronchocele, leucorrhœa, increased among you for a few years past? "I have seen but one case of bronchocele in this town, or in all this region. Within the eight years, pneumonia has frequently prevailed, especially in the spring, but I have no reason to believe that it is more prevalent than formerly. Leucorrhœa is a frequent disease, but not more common than in former years. Of prolapsus uteri, I can say, it is almost epidemic in this region. I have been harrassed, not quite to death, with this complaint, but have had my patience tried by it. Some cases have been induced evidently by leucorrhœa, but it has generally arisen from other causes." "I have a melancholy picture to present to you of consumption. This complaint is not only on the increase among us, but extremely prevalent. My heart sickens within me, when I reflect upon the horrid nature of this disease, and of the many victims that have within a few years, yes, within one year, been immolated by it, and the powerless nature of medical agents. Within one year, from this year, nine adults fell a prey to that fell destroyer, besides one of our townsmen, who died abroad. Population 788. Of these, three were males and seven females. I sometimes read of the great success that has attended medical gentlemen in the treatment of this disease, but I have never had the good fortune to be of much use to my patients towards effecting a cure; and yet my luck has been about equal to that of my brother physicians, with whom I have been acquainted. Most of these consumptive persons evidently possessed an hereditary predisposition to the complaint of which they died. A few years before I came to Rowe, scarlet fever prevailed epidemically."

Shelburne.—According to Mr. Packard, in the Franklin Mercury, of February 23, 1841, the whole number of deaths in Shelburne, in 12 years, was 140, of which there were, under 5 years, 39. Between 5 and 10, 1. Between 10 and 20, 9. Between 20 and 30, 14. Between 30 and 40, 11. Between 40 and 50, 13. Between 50 and 60, 8. Between 60 and 70, 14. Between 80 and 90, 10. Between 90 and 100, 4. The population of this town has not varied for many years much from 1000. In 1810 it was 1018, and in 1840 it was 1034. The table, for 12 years, shows the whole number of deaths to be 140, giving a yearly average of 11 and 2 thirds; and assuming ten hundred and twenty as the medium of population during those years, which, probably, is not far from the truth, we have one death for every eighty-seven of the population each year. The greatest number of deaths in any one year was 15; the least 8. The number of deaths of consumption was 28, or one in five, of the whole number of deaths. Of the 140 deaths that have occurred in this town, for the 12 years recorded, above 45 of them were after the individual arrived at 60 years of age and upwards, or one to 3 and 1-9th, and one in about 4½ arrived at 70 years, and one in 80 years and upwards. At the rate of mortality which this town has had for 12 years past, it would take about 96 years for a number equal to the whole population to die.

Shutesbury.—"I believe I have the number of deaths from consumption correct for 12 years, the time which I have been in town. The number from consumption was 56, for 12 years. In the last 6 years,

COURSE OF CHOLERA
IN BOSTON IN 1849.
CHART
showing the locations in which all the cases of Cholera at the Hospital & all the fatal cases elsewhere originated.
The dark spots give the localities, & the figures, the number of cases which occured at that location.
On Ship Board 10
In the City proper 538
At East Boston 41
At South Boston 53
At the City Institutions as follows:
House of Industry 23
" " Correction 10
Lunatic Hospital 4
At Deer Island 28
Fatal cases 611. 707
City Hospital for Cholera.
COMMON
Church
Pleasant
Middlesex
Nutkik
Washington
Harrison Avenue
Albany
Utica
Harvard
Kneeland
Beach
Oliver Pl
Aetna Pl
Lincoln
South
Sea
Cove
Foster Pl
Eliot
Lagrange
Boylston
Tremont
West
Washington
Winter
Bromfield
Summer
Franklin
Milk
Federal
Harrison
Johnson
Pearl
Purchase
Oliver
Broad
Fort Hill
Congress
Devonshire
Water
Devonshire
Arch
Broad
Somerset
Park
Beacon
Chestnut
Mt Vernon
Pinckney
Cornhill
State
Market
Charles
Cedar
May
May St
James Pl
Centre
Cambridge
Russel
Belknap
Hancock
Temple
Bowdoin
Bulfinch
Court
Green
Stanford
Mercer
Pitts
Ivers
Derne
Derne
Friend
Union
Blackstone
Cross
Hanover
Salem
Fulton
Richmond
Ann
Prince
Hull
Charles
Foster
Tileston
Hanover
Ann
Hanover A
Mount Ct
Fenn
Endicott
Mardin
Fullum
Charlestown
Haverhill
Portland
Merrimac
Andover
Nashua
Lowell
Wall
Green
Conch
Milton
Lynde
Brighton
Allen
Chamber
Russel
Buttolph
Centre
Cambridge
Franklin
Bridge
Lewis St

29. Ten died of consumption, over 70 years of age. Eighteen died in the 12 years, over 70. There are now living in town, 68 people over 70 years of age, and a number of them are from 83 to 92 and 98. Mrs. Pratt is living in town, at the age of 98, and Michael Vermont, at the age of 92." Ephraim Pratt died in this town, I believe in 1816, at the age of 117. I understand that one of his descendants lived to the age of 104.

Warwick.—Total number of deaths in Warwick, in 26 years, 443. Average 17. 116 under 10 years of age; 60 over 80; 13 over 90; 94 of consumption, under 60 years; 30 of typhus fever, 11 of casualty; 6 of suicide; 4 of cancer; 17 of intemperate habits; 11 of dysentery, in 1822; 16 of dysentery, in 1824; 7 of consumption, in 1827; 5 of typhus fever, in 1839. I would add there have been, in the 40 years past, 626 deaths. Averaging a little over 15 a year.

Whately.—Whole number of deaths in Whately, in 61 years, 619. Average 10 and 15 hundredths a year. One death in 82 inhabitants. Twenty-one cases of consumption recorded in 61 years.

XXIII. Extracts from the "Report on the Cholera in Boston in 1849."

This able report was prepared under the superintendence of Henry G. Clark, M. D., the City Physician. We make two extracts—one by Henry B. Rogers, Esq., chairman of the committee of the aldermen; and the other, containing the topography of those parts of the city in which the Cholera appeared, by Henry W. Williams, M. D.

Mr. Rogers remarks:—Before closing their report, your committee deem it their duty to call the special attention of the Board of Health, and their successors in office, to the present unhealthy condition of many of the streets, in the lower parts of the city. They refer, particularly, to portions of the Neck and Harrison Avenue;—to the South Cove,—the territory bordering on the water, from South Boston upper bridge to State street,—the neighborhood of Ann street,—a part of the Mill Pond lands,—and certain tracts on the northerly side of Cambridge street, near the river. In all these localities, there are many streets, courts, and lanes which are exceedingly contracted, ill ventilated, and dirty; without any proper grade and with no, or very insufficient sewerage. This state of things is mainly owing to the fact of their having been originally laid out by private speculators, whose only object was to make a profitable investment for themselves, and who paid but very slight attention to the health or comfort of those who have to reside upon them. But in some cases, it arises from the great increase of population, which renders the space and accommodation, originally provided for a limited number of residents, wholly insufficient for the proper supply of the present necessities. In certain localities, as on the South Cove, the marshy and new made ground has settled, and the imperfect sewerage which was originally provided, has become nearly useless. The great body of the streets alluded to are private ways, over which the city exercises no special care or custody; and the policy, hitherto pursued by it, has been to refuse to accept them, until they are graded and put in good order by the abutters. It may be questioned whether this policy is a sound one. The public in

terest would seem to require that the Board of Health should have the power to cause all streets and ways to be laid out, of a suitable width, and to be properly graded and provided with ample sewerage, constructed and laid down in the best manner, before any buildings are erected upon them. And in case of neglect or refusal to comply with their requisitions, they should be authorized to proceed by their own agents; and the adjacent territory should be held answerable for the payment of the necessary expenses.

The committee consider that the whole subject of streets and ways, in respect to width, ventilation, grade, and drainage, is one of very great and increasing importance. They would urge strongly the necessity of enforcing all existing statutes and ordinances; and, where a deficiency of power is apprehended, the propriety of an immediate application to the legislative power. A great deal undoubtedly has been done in reference to this subject, during the last few years, but very much still remains undone; and it is only by a long continued system of measures, patiently persevered in, that we can expect to arrive at that point of practical perfection which will secure the health and comfort of our inhabitants.

We would now refer to another subject which, in our view, also demands the attention and action of this Board. We allude to the very wretched, dirty and unhealthy condition of a great number of the dwelling-houses, occupied by the Irish population, in Batterymarch, Broad, Wharf, Wells, Bread, Oliver, Hamilton, Atkinson, Curve, Brighton, Cove, Ann, and other streets. These houses, for the most part, are not occupied by a single family, or even by two or three families; but each room, from garret to cellar, is filled with a family consisting of several persons, and sometimes with two or more families. The consequence is an excessive population, wholly disproportioned to the space or the accommodations.

From the very necessities of the case, these residences soon become polluted with all manner of bad odors. In such a state of things, there can be no cleanliness, privacy, or proper ventilation, and little comfort; and, with the ignorance, carelessness, and generally loose and dirty habits which prevail among the occupants, the necessary evils are greatly increased both in amount and intensity. In Broad street and all the surrounding neighborhood, including Fort Hill and the adjacent streets, the situation of the Irish, in these respects, is particularly wretched. During their visits the last summer, your committee were witnesses of scenes too painful to be forgotten, and yet too disgusting to be related here. It is sufficient to say, that this whole district is a perfect hive of human beings, without comforts and mostly without common necessaries; in many cases, huddled together like brutes, without regard to sex, or age, or sense of decency; grown men and women sleeping together in the same apartment, and sometimes wife and husband, brothers and sisters, in the same bed. Under such circumstances, self-respect, forethought, all high and noble virtues soon die out, and sullen indifference and despair, or disorder, intemperance and utter degradation reign supreme.

The houses above alluded to are also insufficiently provided with the necessary in and out of door conveniences, which are required in every dwelling place. The great mass of them, particularly in the

region last referred to, have but one sink, opening into a contracted and ill constructed drain, or, as is frequently the case, into a passage way or street, and but one privy, usually a mass of pollution, for all the inhabitants, sometimes amounting to a hundred. Some of them have neither drain nor privy; and the tenants are obliged to supply their necessities as best they can. Many of them were originally designed for warehouses, and have been converted to their present uses as economically as possible; whilst others, which were once well fitted for the accommodation of a single family, have become wholly inadequate to meet the wants of the large numbers that now crowd into them. A great portion of those in Broad street and Fort Hill are lofty buildings from three to six stories high, and contain from forty to one hundred inhabitants. The rent for each room ranges from one dollar to one dollar and a half; and is generally collected by a man who hires the whole building, or several buildings, and enforces prompt payment under the threat, always rigidly executed, of immediate ejection.

Appended to the medical report is a sketch of Half Moon place, which is probably the worst locality in the city. Here the houses are built around an area from which air is almost totally excluded by the perpendicular wall of Fort Hill on one side, and the lofty buildings of Broad street on the other. A large part of the area is occupied by some twelve or fourteen privies, constantly overflowing, and by ill constructed and worn out sinks and drains, into which are hourly thrown solid substances, of all sorts, which choke them up and cause the liquid parts mixed with them to run over. Into the area there is a narrow entrance from Broad street, whilst a steep and crazy staircase affords a passage to Humphrey place, some fifty feet above. Side by side with the staircase, and fully exposed, a large, square, plank drain makes a precipitous descent, conducting, half hidden, half revealed, not only the waste water of the houses in Humphrey place, but, also, the contents of its privies to the area below; which, as may be supposed, is redolent of the fact.

Your committee have already, in a former communication, described to the Board the state of the cellars under the houses, above described; but the importance of the subject, as well as the consideration that the duties of the existing Board will soon be transferred to others, seem to require some notice of them here, even at the risk of repetition. These cellars are generally entirely beneath the surface of the ground, and, to most of them, the only entrance for light or air is by the passage, or cellar door way, leading down to them by steps from the sidewalk above. They are crowded with families, which lodge there and make them their sole place of abode. Besides a dwelling house, these places very generally serve the purposes of a grocery and vegetable shop; and, not unfrequently, a groggery and dancing hall are added. As might be expected, intemperance, lewdness, riot and all the evil spirits to which poor humanity is at any time subject, enter in and dwell there. Few of the cellars have either drains or privies. Some of them are divided off into one or more rooms, into which hardly a ray of light, or breath of air passes, and where, notwithstanding, families consisting of several persons reside. How the lamp of life, under such circumstances, holds out to burn, even for a day, is, perhaps, as

great a wonder as that such a state of things should, in this community, be suffered to exist. That such residences become the permanent abode of fever, in some of its forms, is well known to the medical men who visit them; and that they tend to shorten life, we may clearly infer from the statistical tables of Mr. Shattuck, who states that the average age of Irish life in Boston, does not exceed fourteen years. The number of cellars, used as dwelling-houses, is, according to the return of the City Marshal, five hundred and eighty-six; and the number of persons occupying them varies from five to fifteen.

The committee would gladly have been excused from the task of setting before you the above most painful details, but it has been forced upon them by a sense of duty and the hope and belief that, for the large portion of the evils complained of, some adequate remedial measures can and ought to be found by the city. Great public considerations seem to them to demand, that every dwelling-house should be provided with sinks, drains, and privies, that are adapted, in size, number, and construction, to the number of individuals who shall occupy it; that the owners should be compelled by law to construct them, under the direction of the Board of Health; and, in case of neglect or refusal, that the estate itself should be held liable for the payment of all expenses which may be incurred by the city in making such provision. A just regard to the health and comfort of the poorer classes, as well as to the rights of tenants, who are unable to prosecute them, would also make it reasonable, that every landlord should be required to fit his building properly to the purposes for which it is to be used, in respect to light, air, and necessary conveniences; and that some provision of law should be made by which the number of tenants should be apportioned to its size and general arrangements. And, especially is it important, that some legal power, sanctioned by penalties sufficiently stringent, should be obtained, to prevent entirely the occupation of underground cellars as dwelling houses.

Your committee submit the above subjects to the serious consideration of the Board of Health, and they recommend that an early application be made to the Legislature for such additional powers, as may be needed to abate the evils complained of.

Dr. Williams's topographical description is as follows:—As this epidemic has, in a very remarkable manner, domiciled itself, so to speak, in localities, nearly all of which have in common certain easily recognizable and well-defined peculiarities, we have procured some perspective drawings and plans of several of them, as specimens of the rest. They will, we think, give a sufficiently accurate impression of the uniformly crowded state of the buildings; of their inaccessibility to air; and the apparent impossibility of arresting the spread of disease in such situations, or of treating satisfactorily in them any of its victims.

We have appended to this report a chart or block plan of the city proper, in which the original location of all the cases which were received at the Hospital, and all the *fatal* cases, so far as they are known, are carefully indicated. This method was preferred to an attempt which must have failed, for obvious reasons, to trace the origin of those also which recovered in private practice. So that, if this statement seems to fall short of what is desirable in this respect, it will

be free from the gross inaccuracies into which the widely varying reports, from a large number of observers, many of whom have no uniform or well-defined standard of diagnosis, must inevitably have led. Besides, as a general rule, the tables of mortality will always give a very good idea of the character and extent of any prevailing epidemic.

The subjoined statistics furnish the history of the origin of 707 cases—611 of which were fatal. The sources of information are the records of the Hospital, and the books of the City Registrar, at the City Hall.

The reports of the office of the City Registrar, being made mostly by the undertakers of funerals, and not by medical authority, are not of course entitled to implicit confidence; but we have no doubt that they give a very fair approximation to the exact truth.

There were doubtless some cases reported as Cholera, which were not so, especially of children under ten years of age; as our experience at the Hospital gave us the impression that it was seldom fatal in this class of subjects. These may fairly be offset by the deaths among adults, from drunkenness, or by drinking cold water, which were reported as Cholera.

The exact age was also evidently only approximately given, the foreign population being very illy informed in regard to their advance in life. This fact is indicated, upon the records, by the large numbers reported as having died at the ages of 25, 30, 35, 40, &c.; showing that the persons were *estimated* to be about those periods of life. But while this renders the statement uncertain for a particular year, (of the age,) it does not affect the results for periods of five years.

Of the 707 cases, 385 were males, and 322 females. Their birthplaces and ages are given in the accompanying tables.

Isolated instances of the disease were noticed in even the most salubrious portions of the city, but, with a very few exceptions, the disease was confined to unhealthy, ill-ventilated and crowded localities. The lower parts of the city, where the drainage is difficult and the cellars more or less invaded by the back-water; those reclaimed from the ocean, and those in the vicinity of marshes, were invaded by the pestilence. As instances in point, we may cite the cases which occurred in the new streets, upon the Neck and the South Cove; Church street; Sea and East streets; Battery-march[1] street; Broad, Wharf, Well and Bread streets; Ann street and its neighborhood; Nashua and Brighton streets, and South and East Boston.

In nearly all these localities, an over-crowded population, bad ventilation, insufficient and unwholesome diet, *intemperance*, and the entire absence of cleanliness, have been most efficient adjuvants in assisting the operation of other causes.

As examples of the influence of filthy habits, deficient ventilation, &c., in what would be considered as healthy situations, may be mentioned the cases which originated in Oliver and Hamilton streets; Sullivan place; and Atkinson, Hanover, West-Cedar, Southac and May streets. So many instances might be cited, from our personal knowledge of the localities where the majority of the cases occurred, that we are quite certain that the influences alluded to above are, as a universal rule, the exciting cause of the disease, with the occasional ex-

[1] Formerly Battery-*Marsh* street,—a name which is quite appropriately descriptive.

ception of those cases which are evidently produced by an unusual indulgence or excess.

The City Institutions at South Boston furnish evidence of the liability of persons of enfeebled constitutions to be attacked by the disease, even when removed to a healthy location, and furnished with clean rooms and a regulated diet.

A considerable number of deaths are reported from these institutions, especially from the House of Industry, notwithstanding the great advantages enjoyed by the medical officers, in being able to place the patients under treatment from the first moments of the appearance of the disease.

The exact place, whenever it could be ascertained, where each case originated, has been indicated, so that, if the epidemic should reappear, as it is certainly not unlikely to do, the Health Commissioners may have it in their power to ascertain at once, not only what streets, but what particular buildings will be likely to require the process of purification. In cases where the number of the house is not designated, as in portions of those reported in Broad, Cove, Sea, and some other streets, it is presumed that most of the cases originated, directly or otherwise, in the houses which were known to be the chosen foci of the disease.

Most of the worst localities are easily to be recognized upon the chart, or on the accompanying list. Among them, as conspicuously bad, may be cited the houses in the rear of 136 Hanover street;[1] Mechanics court; No 14 Battery-march street; Humphrey place; Burgess' alley; Cross, Broad, Well, and Wharf streets.

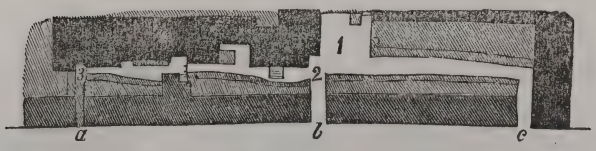
At East Boston there were quite a number of fatal cases, in or near Liverpool street; in every instance, as far as can be ascertained, the houses which were visited with the pestilence, were without proper *drains*, while others, in the same locality, and in otherwise the same circumstances, but *well-drained*, entirely escaped.

It will be observed that the Hospital was located near the scenes of the greatest ravages of the disease. This was most appropriately done. That it did not itself constitute a focus of contagion, may be proved from the circumstances that several cases originated in its vicinity, before it was occupied by patients from other parts of the city, as also by the fact that the disease was not manifested in all directions around it. *No cases occurred in the houses upon the square.* They were limited entirely to the houses, (on the northeastly side of the hill,) which were occupied by the most miserable portion of our population, living in the most miserable manner; while those residing, under better circumstances, in the opposite direction from the building, were entirely exempt from the visitation of the malady.

It will be observed that about two hundred cases occurred within a circle, having a radius of a few rods only, whose centre was in Broad street, near Burgess' alley. The population of this district is enormous. We present, on the opposite page, a plan of Half-moon place, with Burgess' and Baker's alley, showing the entrances from Broad street.[2]

[1] It is worthy of note that a few years since, typhus or typhoid fever prevailed here to an unusual extent.

[2] See Shattuck's "Census of Boston."



No. 1, *Half-moon Place.* *No.'s* 2 *and* 3, *Burgess' Alley.*

a. Entrance through arch to Burgess' alley.
b. Entrance through Half-moon place from Broad street.
c. Entrance to Baker's alley.

The dark-colored parts represent the brick blocks. The *darkest* colored, the houses where the worst cases occurred. The lighter colored tints represent the sheds and out-houses.

View of Half-moon Place.

Half-moon place is situated in the rear of Broad street, and is formed by a kind of excavation into the side of Fort Hill; the houses which form its semi-circular side being built either against the hill, or separated from it by a space of a few feet. It has two narrow entrances between blocks of houses, on Broad street, and "Jacob's Ladder," which, at the time of the prevalence of Cholera, was a very dilapidated stair-case, that connects it with Humphrey place, and thus with the higher streets upon the hill. Baker's alley, one of its entrances, forms its northern boundary, and Burgess' alley extends from its southern extremity. The cut represents a portion only of the place, and conveys, as do the others, but an imperfect idea of the near proximity of the houses, and the utter want of any circulation of air. The

Burgess' Alley; North View.—From point marked 2, on plan.

side towards Broad street, from which the view is taken, is formed by the sheds in the rear of the houses on that street, with extremely dirty backyards, and a fair proportion of privies.

To the right of "Jacob's Ladder," as represented in the cut, is a cluster of six privies, situated nearly in the centre of the place. At the time of the epidemic, these were greatly out of repair, and the ground about them was covered with their overflowing contents, removed only by evaporation. They have since been repaired, so as to present a better outward appearance. A fence has since been erected, as a screen, at the side of the "Ladder," to hide the naked deformity of its neighborhood. At the foot of the drain are two more clusters of privies, six in number. The open space likewise presents three cesspools, intended to convey off the dirty water; but which were choked by all sorts of vegetable matters, as fragments of cabbage and potatoes. As these accumulated, they were scooped out and thrown upon the ground near them, which was thus plentifully bestrewed with putrefying vegetable matters. With these were mingled no small proportion of substances still more loathsome.

Burgess' Alley; South View.

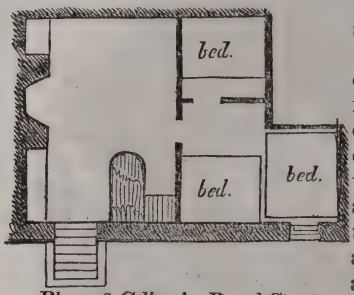
The houses to the left, are from four to six stories in height, and were crowded with inhabitants. Their rear was only separated from the stone-wall which supported the side of the hill, by a space of a few feet, and here the contents of drains from above found a receptacle, creating a perpetual humidity which must have reminded the tenants of their native land.

Entrance to Burgess' Alley. (Looking out.)

Burgess' alley runs from the southern extremity of Half-moon place, and its houses, fruitful sources of examples of the disease, are destitute of any opening whatever in their rear—being built against the hill, and in front are separated from the rear of the houses on Broad street by merely the width of the alley and a row of narrow sheds and privies.

The sketches can convey a faint idea, only, of the actual narrowness of the limits occupied by an immense population, and the utter impossibility of a healthy circulation of air in such locations, where a free ventilation is epecially demanded by the supreme filthiness of the persons who occupy them.

The plan which is given of a triple cellar, would scarcely be believed to represent a reality, by those unacquainted with some of these localities. The principal tenant considered his accommodations of the most desirable character. The first cellar, from the street, was occupied, in one corner, by a bar for the sale of refreshments, and served as kitchen and parlor. The second, into which two beds were crowded, served as the family sleeping-room, whilst the third, a dungeon six feet square, and the same in height, (with no aperture for the admission of air, save the narrow door which was closed at night,) served to accommodate boarders.



Plan of Cellar in Bread Street.

The landlord said the tide came through the floor of his rooms but rarely! We have procured a sketch of the appearance of one of these subterranean apartments. It gives a fair idea of the mode of stowing the bedsteads, and of its contracted dimensions; but cannot give an adequate impression of its darkness and its loathsomeness. The family was warned by the visiting physician of the district not to permit these inner rooms to be occupied; yet he was called a few nights after, to see a man in this very den, who, two or three hours previously, was in apparent good health, but had then already reached the stage of hopeless collapse.

Subterranean Bedroom in Bread Street.

One cellar was reported by the police, to be occupied nightly, as a sleeping apartment, by thirty-nine persons! In another the tide had risen so high that it was necessary to approach the bedside of a patient by means of a plank, which was laid from one stool to another; while the dead body of an infant was actually *sailing* about the room in its coffin!

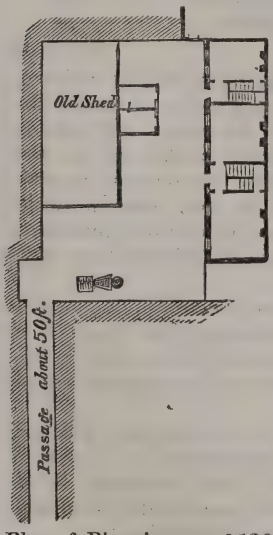
Many of the inhabited cellars in this vicinity are inundated by the back-water of the drains during high tides; and being entirely below the level of the sidewalks, they are necessarily, therefore, almost entirely without light or ventilation. But, far from being considered a hardship, a residence in them is considered preferable to loftier apartments. They are said to be cooler in summer and warmer in winter, and consequently command higher rents.

Another locality, which furnished quite a number of victims, is shown in the following view. It is a nest of miserable tenements a the easterly corner of Stillman and Endicott streets.

View of Tenements in Stillman Street.

They are filled to overflowing with a most vicious and miserable population. Even the cellars, under the long low building, near which the two figures are seen, and into which it is very difficult to *crawl*, are inhabited, although the crazy timbers overhead threaten each moment to entomb, or the waters beneath to drown them.

We give but one illustration more: it is the place in the rear of 136 Hanover street, which was inhabited chiefly by the unfortunate "Crowe" family. It will be recollected that some of the earliest cases occurred here, and the victims were seized and died in such rapid succession as to attract special attention to the spot. There were something like twelve deaths here, in a period of little more than two days, out of a population of less than fifty persons.



Plan of Place in rear of 136 Hanover Street.

The plan shows the long narrow entrance; the want of any passage beyond; the entire absence of any yard in the rear; and the reason, therefore, why all the excrementitious matters, the refuse vegetables, &c. should be constantly accumulated in the centre of the place. Nothing arrested the fearful progress of the disease, here, but the immediate removal of all the inmates, and a thorough cleansing of the premises.

The large house, in the left foreground, was in tolerable good repair, but excessively crowded with inmates. The farther building on the right, was formerly the rear wing of a larger house. It is a very dilapidated and incommodious building with very low and narrow rooms. It was with the greatest difficulty that the people were persuaded to leave these wretched quarters. The horse-litter[1] was sent repeatedly for them, and, although some of them were found sick upon the floor,

[1] An easy covered carriage (containing a bed,) for the conveyance of patients, which was constantly in readiness, day and night, in the Hospital yard.

all the energy of the authorities was required to overcome their listless indifference to their fate.

House in rear of 136 *Hanover Street.*

An examination of the habits of the victims of Cholera shows with how much discrimination they were selected for its attack; while the rate of mortality, among those who were intemperate, is still more remarkable.

Of the whole number of patients at the Hospital, (262,) one hundred and fifty-four were known to be intemperate, and one hundred and eight who were *supposed* to be temperate.

The whole number of deaths there was - - - - - -		166
Of those who were temperate, - - - - - - - -	37	
Of those who were intemperate, - - - - - - -	129	
		166
The whole number of recoveries was - - - - -		96
Of the intemperate, - -	25	
Of the temperate, - - -	71	
		96

The experience of this epidemic has certainly given most satisfactory evidence of the power and value of sanitary measures: for, as we have stated in the early part of this report, while no person was attacked without some obviously exciting cause, so, in every case in which those much exposed were removed from these deleterious influences, and provided with cleanly, airy apartments, and suitable food, an attack of the disease was averted.

The laws of nature, although immutable, are beautifully adapted to the welfare and happiness of mankind. In nothing can this fact be more strikingly illustrated than in its relation to the public health, in a city whose natural advantages, for improvement in this respect, are not surpassed by any other.

Modern science has demonstrated that the most malignant epidemics may be greatly controlled by efficient sanitary reforms: It is not unreasonable, therefore, that for the future, the legal custodiens of the public health, (the necessary means being first placed at their disposal,) should be held to a strict accountability for its conservation.

AGES AND PLACES OF BIRTH OF THOSE WHO DIED.

Ages.		35 to 40, - -	87	Over 75, - -	4	New England,	39
Under 5, - -	63	40 to 45, - -	52			Other states, -	12
5 to 10, - -	40	45 to 50, - -	39	Total, - -	707	Ireland, - -	460
10 to 15, - -	18	50 to 55, - -	22			Irish children,	49
15 to 20, - -	36	55 to 60, - -	19			England, - -	18
20 to 25, - -	68	60 to 65, - -	18	*Places of Birth.*		Other countries,	45
25 to 30, - -	101	65 to 70, - -	6	Boston, - -	42		
30 to 35, - -	87	70 to 75, - -	1	Massachusetts,	42	Total, - -	707

METHUEN
METHUEN
METHUEN
ANDOVER
ANDOVER
MAP
OF THE
TOWN
LAWRENCE
MASS.
MERRIMACK
RIVER
COMMON
MAPLE ST
CHESTNUT ST
HAVERHILL ST
SPRING ST
SUMMER ST
ESSEX ST
METHUEN ST
CANAL
BOSTON and MAINE RR
CHURCHES
Episcopal
Unitarian
Congregational
Baptist
Free will Baptist
Catholic
Methodist
PUBLIC BUILDINGS
Town house
School houses
Engine houses
COMPANYS BUILDINGS
Boarding houses Atlantic
Atlantic Cotton Mills
Boarding houses Bay State
Bay State Mills
Machine Shop and
Foundry Essex Co
Mechanics Blocks Essex Co
Steam Mills
Steam Saw Mill Essex Co
Steam Saw Mill Norcross
Repair shop B & M Rail Road
Piano Factory Stevens
Hotels
1200 ft to one inch
Drawn by J. K. Barker Oct 1850

XXIV. Sanitary Survey of Lawrence. By the Commission.

[The following article relating to Lawrence, and the next relating to Attleborough, are inserted to illustrate a mode by which a sanitary survey of a town may be made, as recommended, pages 166 and 358.]

1. *Natural and Atmospheric Condition of the Town.*

Lawrence was projected as a manufacturing town, in 1844, and incorporated April 17, 1847. It is 26 miles from Boston, 20 from Salem, 24 from Newburyport, and 29 from Manchester, N. H. Its latitude is 42° 42′ 57.67″, and its longitude 71° 09′ 05.84″, west of Greenwich. It contains 4,374 square acres, 344 of which is covered with water. 1,980 acres of the land on the south side of the Merrimack River was taken from Andover, and 2,050, on the north side, from Methuen.

The general character of the soil is a dry, sandy alluvial, resting on a rocky base, at a greater or less depth from the surface. Clay gravel prevails in the northerly parts of the town. On the south side of the river it is generally level, and also in the central parts on the north side. The top of the dam across the Merrimack is 45 feet above tide water. In the populous part of the town, the foot of Lawrence street is the lowest elevation, being 4 feet above the crest of the dam, and 37 feet below the highest elevation of the streets. Two hills, one on the easterly and the other on the westerly borders of the town, rise to the height of about 140 feet above the dam.

There are three streams of water—the Merrimack, near the centre; the Spicket, on the north; and the Shawsheen, forming, in its sluggish course, the easterly boundary of the town, on the south side of the Merrimack. The first two are rapid, but neither is subject to overflow its banks. The Merrimack, in its natural passage through the town, has a rapid here, known as Bodwell's Falls, which in some places falls 4 or more feet in a 300 feet passage. In a medium current, about 5,000 cubic feet of water passes per second, and it sometimes rises to 60,000 per second, thus affording a water-power here nearly or quite equal to that of Lowell. Lake Winnepisiogee, in New Hampshire, containing about 120 square miles, the principal source of the Merrimack River, has been purchased by the owners of the water power in this and the other manufacturing towns above, to make the flow of water at all seasons equal to the general average. The Spicket falls 40 feet over a succession of dams, and discharges about 100 cubic feet per second. The Shawsheen has very little perceptible fall in this town.

The town seems to be free from natural sources of malaria; though meteorological and other similar observations have not been made for a sufficient time, nor with sufficient accuracy, to determine, with much exactness, the true natural character of the locality, nor to ascertain whether any atmospheric peculiarity or sanitary impurity exists.

2. *Artificial and Local Condition of the Town.*

The lands now comprised within the township, previous to 1844 were used principally for agricultural purposes, and contained, in cluding the Methuen pauper establishment, less than 100 inhabitants In that year an association was formed, consisting of Messrs. Samuel Lawrence, John Nesmith, Thomas Hopkinson, Josiah G. Abbott, of

Lowell, and Daniel Saunders, of Andover, by the name of the "Water Power Association," for the purpose of purchasing lands and creating a water power on Merrimack River, in Andover and Methuen. They selected the site and projected this as a manufacturing town; and purchased about three-fourths of the land comprised within the present limits of the township.

The same individuals obtained an act of incorporation by the name of the "Essex Company," dated March 20, 1845. The stock of this company was taken up and the company organized in April, 1845, at which time Hon. Abbott Lawrence was chosen President; Messrs. Patrick T. Jackson, William Sturgis, Nathan Appleton, John A. Lowell, and Ignatius Sargent, Directors; and Charles S. Storrow, Esq., Principal Agent and Chief Engineer. To this company all the lands purchased by the "Association" were conveyed.

Before commencing the enterprise, a careful survey was made and a general plan formed, under the direction of the chief engineer, for using the water power, for the location and construction of the dam, for the canal and the mills, and for the streets and public squares of the town. In the spring of 1846, the services of Capt. Charles H. Bigelow, formerly of the U. S. Engineers, were also obtained for the company, and under his immediate direction the works upon the dam and canal were successfully carried forward to their completion, in accordance with the original designs.

The results of the surveys were laid down upon a map, an outline of which is presented, accompanying this sketch. The streets are from 50 to 80 feet in width, and generally 200 feet apart. The building lots are 93 feet deep from the street, leaving a back passage-way of 14 feet in width between the two tiers of lots.

The elevation of the crossing of each street, above a given level, is stated in the plan, showing the grading proposed to be made by the Essex Company, as a guide to builders; and the streets were so drawn as to admit of surface drainage and under-ground sewerage. A large common sewer, the interior of which is 6½ feet high and 3 feet wide, admitting a man to walk erect, was constructed of brick laid in cement and of stone masonry, and passes under and 4 feet below the bed of the canal, near the foot of Lawrence street, into the Merrimack river. It is in a natural ravine, of gradual descent, with a constant stream of water passing through it, keeping it at all times sweet and clean. There are two other great sewers in other parts of the town, built of brick and stone, each 4 feet in diameter, passing under the canal. These sewers lead from Haverhill street, (the one most elevated,) southerly, into the Merrimack. Others lead northerly, into the Spicket, and a very effective drainage and sewerage are by these means afforded. The town has appropriated $5,000, this year, for the construction of collateral sewers.

The main common or public square, near the centre of the town, comprises 18 acres, and was the gift of the Essex Company. The other lands were divided into lots and numbered, a plan of which was drawn on different sheets, and bound in a volume, on a scale sufficiently large to admit inserting in each lot the name of the original purchaser, and the successive owners to which it may be transferred for several years. A part of the lots designed for private use

were first offered for sale at auction, by the Essex Company, April 28th, 1846. Restrictions were imposed upon the use of some of these lands. On Haverhill street no lot can have upon it more than one house and the necessary out-buildings, for twenty years; and no house can be occupied by more than one family at the same time. On Essex street, brick or stone buildings only, three stories high, with slate or metallic roofs, can be erected. It is to be regretted that restrictions could not have been laid upon all the lands, as they might have prevented some inconveniences and sanitary evils. Many of the streets, public squares, and other inclosures, about the town and near the mills, are planted with ornamental trees and shrubbery. The frame of the first dwelling-house was raised September 12th, 1845; since that time many substantial buildings, brick and wood, and others of less permanent character, have been erected. A part of the town, above the dam, on the south side of the river, known as "Dublin," in a dry and elevated situation, has been discreetly appropriated for "shantees," for the accommodation of Irish laborers and their families. The number of private dwelling-houses, including 90 Irish shantees, and exclusive of the boarding-houses of the Bay State and Atlantic Corporations, was 335, in February, 1847; and 849, in 1849. Of 335 tenements, 12 were at that time occupied partly for stores; 96, including the half of the shantees, contained from 2 to 9 persons each; and the remainder, 227, from 10 to 74 each. In 1850, according to the assessors' return to the State, for the decennial valuation, there were 828 dwelling-houses; and according to the United States census, 1,081 tenements.

Water for domestic use is at present obtained from wells; it is considered good for drinking, though rather hard for many purposes. Cast iron pipes, connected with force-pumps at the mills, and with the water of the canal, for use in case of fire, are laid in part of the streets, and are to be extended to others and to reservoirs upon the top of the adjacent hills. An aqueduct company was incorporated May 10, 1848, to bring water into the town; but no definite measures have as yet been matured under its sanction.

The public buildings erected, prior to January, 1850, were—9 houses, for the accommodation of the primary and mixed schools, 2 for the grammar schools, and 1 for the high school; 6 churches, and a Town Hall. In all the public buildings the most approved modern sanitary plans for warming and ventilating have been adopted.

The High School-house is a substantial brick edifice, situated on Haverhill street, fronting on the northerly side of the common. It is large and elevated, and amply provided with the most approved, convenient interior fixtures and furniture, and with necessary out-buildings; and with room for exercise and recreation. It cost about $15,000. Land is reserved in the neighborhood for the erection of additional buildings when needed.

The Town Hall is a brick edifice of great architectural beauty, 121 feet 2 inches in length, 64 feet 2 inches in breadth, and 55 feet in height. It fronts on the southerly side of the common, and was erected in 1849, at a cost of about $40,000. It contains a large hall for the accommodation of the people in general town meeting, rooms for the selectmen, and the various town officers, or for the mayor, aldermen,

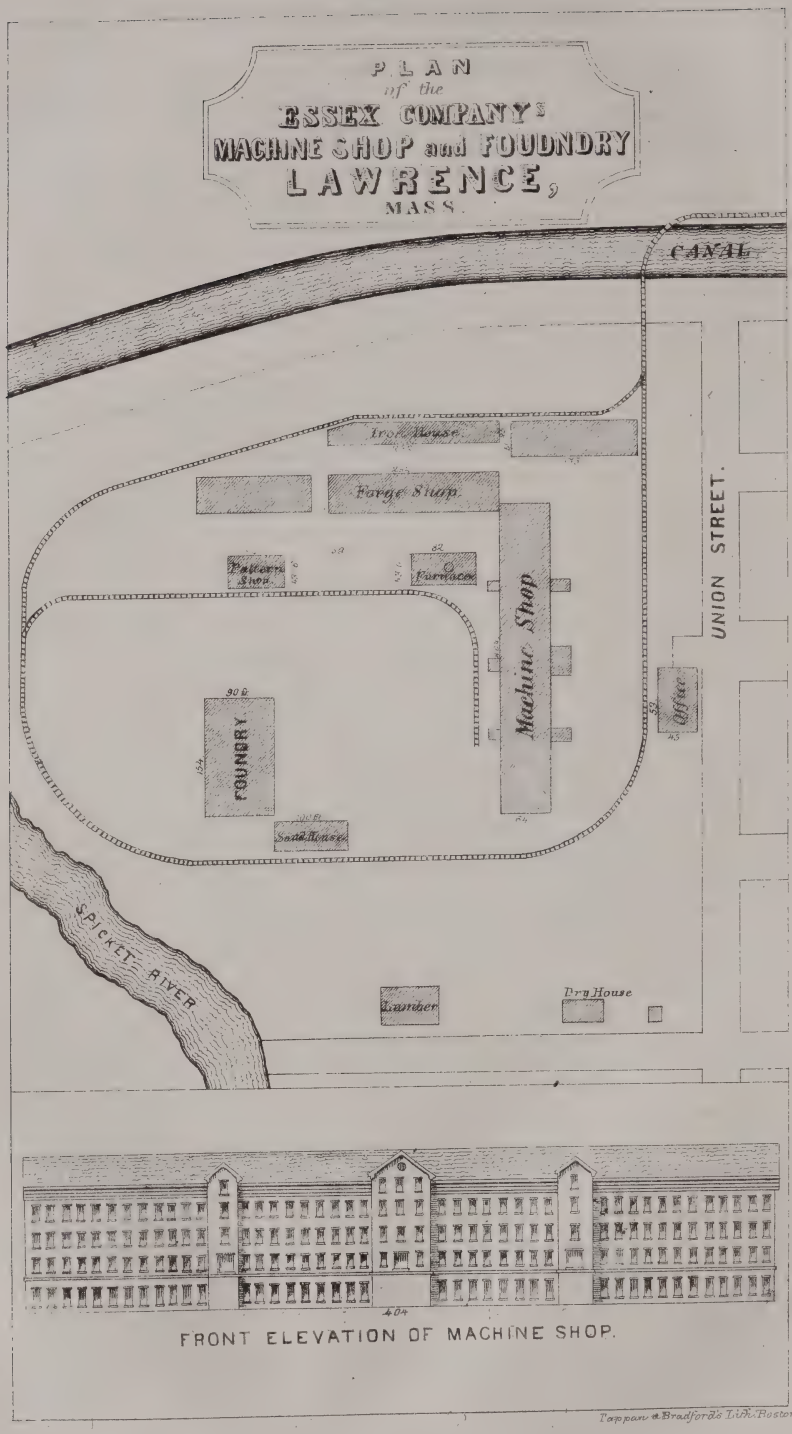
and common council, when a city government shall be established, and for the town and county courts.

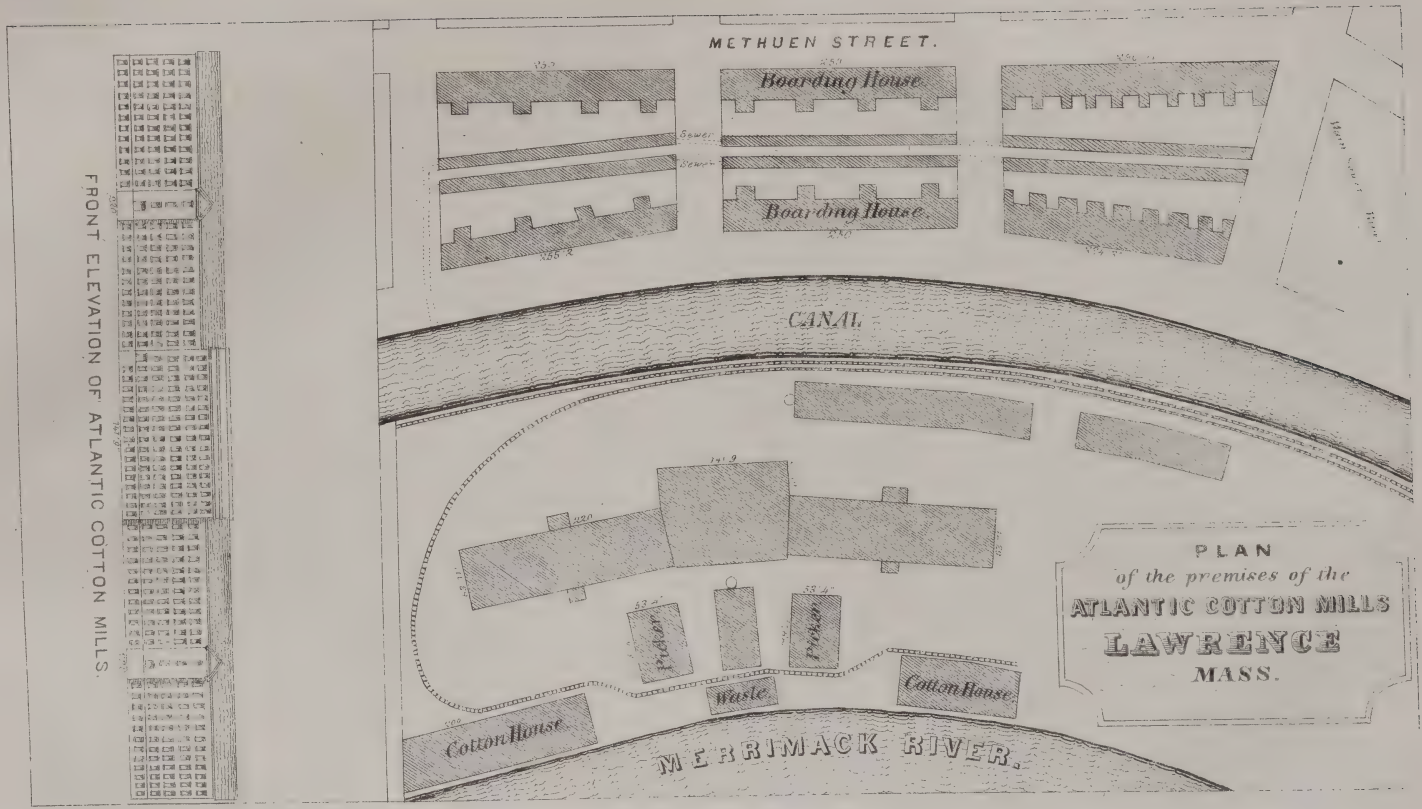
These two buildings are unnecessarily large for the accommodation of the present inhabitants of the town, but are constructed partly with a view to its prospective growth.

Several different companies have been incorporated in this town, for manufacturing purposes. The four principal ones that have commenced operations, are the "Essex Company," incorporated March 20, 1845, with a capital of $1,500,000; the "Bay State Mills," incorporated February 2, 1846, with a capital of $2,000,000; the "Atlantic Cotton Mills," incorporated February 3, 1846, with a capital of $2,000,000; and the Lawrence Gas Company, with a capital of $100,000. These companies together had expended, prior to July, 1850, about $5,000,000. The "Union Mills" and the "Pacific Mills," each with a capital of $1,000,000; and the "Bleaching and Dyeing Company," with a capital of $500,000, have been incorporated, but have not yet commenced operations.

The Essex Company,—the owners of the water power and principal owners of the town,—have erected the dam, canal, and machine shop. They dispose of the water power to other companies on certain conditions, which are specified with great care and minuteness in the printed proposals for their sale. They define a "Mill Power" to be "thirty cubic feet of water per second, when the head and fall is twenty-five feet," which is to be graduated to a less or greater quantity as the head and fall shall be greater or less than twenty-five feet. According to this principle, a fall of 20 feet would require $37\frac{17}{19}$ cubic feet, and a fall of 10 feet would require 80 cubic feet, per second. A similar principle has been adopted at Lowell. A mill power is considered equal to about 60 or 70 horse power. Among other conditions of sale, the water power and mill sites are to "be held, used, and improved, for mills or buildings appurtenant thereto, or for such dwelling-houses, boarding-houses, sheds, and other out-houses, as shall be required and actually used for the accommodation of the agents, clerks, overseers, machinists, watchmen, or operatives, employed in such mills, and not appropriated to any other purpose whatever." And "the grantees are not to use any building for, or to set up or continue any laboratory, powder mill, furnace, or forge, nor any chemical, or other works whatever, which may be so noxious or dangerous from fire or otherwise, as to impair, injure or endanger the life, safety or reasonable comfort of any person." And "no grantee shall, without license from the grantors, to be given and revoked at their pleasure, (which license is not to be given but with the consent of the mill owners next on each side adjoining,) keep or permit to be kept, any tavern or public house of entertainment, nor any livery stable, nor sell nor permit to be sold, any spirituous liquors of any kind, in any shop, store or building, upon the granted premises." These excellent stipulations are accompanied with suitable penalties and forfeitures in case of non-fulfilment. They have an important sanitary bearing.

The excavation for the foundation of the dam was commenced August 1, 1845; the first stone was laid September 19, following; and it was completed in 1848. The foundation is embedded in the solid rock, and bolted to it with iron. The structure is of solid masonry


PLAN
of the
ESSEX COMPANY'S
MACHINE SHOP and FOUNDRY
LAWRENCE,
MASS.
CANAL
Iron House
Forge Shop
Pattern Shop
Furnaces
Machine Shop
UNION STREET.
Office
FOUNDRY
Sand House
SPICKET RIVER
Launcher
Dry House
FRONT ELEVATION OF MACHINE SHOP.
Tappan & Bradford's Lith. Boston.


METHUEN STREET.
Boarding House
Boarding House
Sewer
Sewer
CANAL
Picker
Picker
Waste
Cotton House
Cotton House
MERRIMACK RIVER.
PLAN
of the premises of the
ATLANTIC COTTON MILLS
LAWRENCE
MASS.
FRONT ELEVATION OF ATLANTIC COTTON MILLS.

laid in cement, 1,629 feet in length. The overfall is 900 feet; the south wing is 324 feet; and the north wing is 405 feet, constructed to unite with guard locks at the head of the canal. The dam is 35 feet thick at the base, and 12½ feet at the lower end of the coping crest-stone. Its greatest height is 40½ feet, its average height 32 feet. The water falls 25 to 27 feet, giving an effective head and fall of 28 feet for the whole of the river. The rock excavation, in preparing its foundation, was 1,700 cubic yards; the mass of masonry laid in cement is about 29,000 square yards; and the hammered granite surface 148,000 square feet. It cost $250,000, including coffer-dams and all incidental expenses.

The pond, produced by this dam, flows back to the foot of Hunt's falls, in Lowell, which is nine miles distant. In consequence of the great length of the overfall, the height of the water in the pond varies much less than in other parts of the river, and not sufficiently to overflow the banks and affect the health of the inhabitants.

The water is taken from this pond by an artificial canal, 5,330 feet in length, 100 feet in width at the upper, and 60 feet at the lower end, measuring at the surface of the water; and 12 feet in depth in the middle, and 4 feet at the side walls. At the head of the canal are 6 sluice-ways, 12 feet deep and 9 feet wide; and a lock for navigation, 95 feet long and 21 feet wide, all built of hammered granite, laid in cement. At the lower end of the canal are three locks, of 9 to 10 feet "lift" each, which are 20 feet wide and 90 feet long; and a large waste weir of masonry, 120 feet in length. The earth excavated for this canal was 266,000 square yards. The side walls contain 12,000 square yards. It is about 400 feet from, and nearly parallel to the river; and in this space are the sites for the mills. The water is prevented from oozing into the adjoining sandy soil by sheet or plank piling. The cost of the canal and the structures connected with it, was about $200,000.

The machine shop is 404 feet in length, 64 in breadth, and 4 stories high, of 13 to 16 feet each, admitting the free ingress and egress of locomotive engines; the forge shop, 232 feet by 53 feet 8 inches, and 17 feet high, to contain 32 forges; and the foundery, 154 by 90 feet, 22½ feet high. The forges are arranged in the middle of the building, and the smoke is conveyed by an underground cylindrical flue of brick, 4 and 5 feet in diameter, to a great chimney in the middle of the yard. This chimney is a circular stone shaft, 142 feet in height, 14 feet exterior diameter at its base, and 8½ feet at its top. The interior flue is of brick, 5 feet in diameter, surrounded by an air chamber nearly to the top, and receives the smoke from the steam-heating apparatus, the annealing furnaces, and the forge-shop. Very little smoke is made at these works, however, the principal part of the fuel used being anthracite coal. The ware-house, store-house, picking-house, annealing-house, and heating-house, will constitute a range of buildings 315 feet in length, by 43 feet 6 inches in width, and mostly 2 stories in height. A pattern-house is to be built, 150 feet in length, 53½ feet in width, and 3 stories in height. All these structures are built of stone, warmed with steam, and are well lighted and ventilated. The motive power is supplied by two Fourneyron iron turbine wheels, improved by Boyden, of 120 to 150 horse power each,

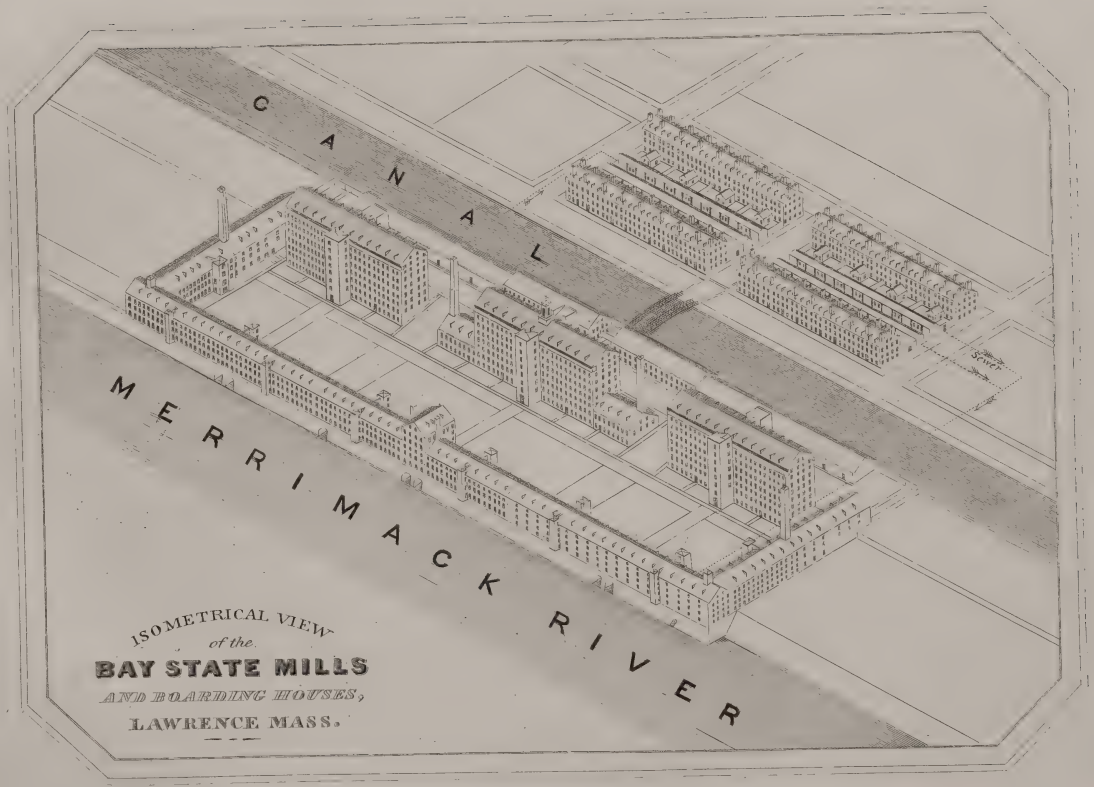
for the machine shop, and one other for the forge shop. The water is conveyed 540 feet from the canal, in underground passages, and is discharged through an underground race-way, 1000 feet in length, consisting of two passages, each 13 feet in width and 15 feet in height, walled and arched with stone. The yard is accessible by a branch of the Boston and Maine Railroad, which completely encircles it and ramifies within it, affording the means of conveniently depositing, in storehouses, the iron, coal, and other heavy materials, so as to require little additional labor in their use. At this establishment machinery of all kinds is made, from a spindle to a locomotive steam-engine. The company will employ in their machine shop and foundery, when in full operation, 800 to 1,000 hands, all males. They now employ about 400.

They have four blocks of dwelling-houses, built of brick, containing 50 good 2-story tenements, with little gardens in front, upon the street, and deep yards leading to passage-ways in the rear, 14 feet in width. They occupy an entire square, have cost $2,000 each, exclusive of land, and are good and convenient residences. They are intended exclusively for the families of the mechanics employed in the Essex Company's machine shop; 16 rent for $100 each, and 34 for $80 each. Another square is reserved for the erection of similar blocks.

The Atlantic Cotton Mills have erected a building 600 feet in length, 5 and 6 stories in height, partly 64 and partly 106 feet in width, which is devoted to the manufacture of brown cotton goods. It is designed to contain 42,500 spindles and 1,168 looms; 25,088 spindles and 728 looms are now in operation; and 164 male and 619 female operatives are employed. This number will be increased to about 1,200 when in full operation. The motive power is supplied by 3 Boyden's improved iron turbine wheels, each 8 feet in diameter and of 300 horse power,—12 mill powers are devoted to these mills. The boarding-houses belonging to these mills consist of 6 blocks, containing 68 tenements, are built upon a similar plan and have the same admirable arrangements for water, cleansing, sewerage, and other purposes, as those belonging to the Bay State Mills, presently to be noticed. Thirty-two of these tenements are intended for the female operatives; and 36, equally good, but containing fewer rooms, are intended for the overseers in the mills, and for men with families, who may also take boarders. A ground plan and an elevation of these mills is presented in the accompanying plate.

The manufacturing establishments at Lawrence have been erected under favorable circumstances. They were planned and constructed under the guidance of the scientific skill and practical experience which had been acquired by wise and successful men, in a series of years, in other places, aided by an excellent water-power, ample capital, and under reasonable national and state legislation. The results have appeared to us so admirable, and so highly worthy of imitation, that we have supposed we could not perform a more useful public service, than to give a more particular description of one of them. It will show, in a favorable light, the intelligence, the enterprise, and the liberality, that has generally presided over all the affairs of this town.

The establishment belonging to the "Bay State Mills," is devoted to


CANAL
MERRIMACK RIVER
ISOMETRICAL VIEW
of the
BAY STATE MILLS
AND BOARDING HOUSES,
LAWRENCE MASS.

the manufacture of cassimeres, shawls, and other fancy woollen goods; and was planned and erected under the general superintendence of Samuel Lawrence, Esq. It is the largest mill of the kind in the world; and will consume, when in full operation, more than 2,000,000 pounds of wool annually. The mills occupy a parallelogram of 1,000 feet in length by 400 feet in breadth, between the canal and the Merrimack River. Buildings are erected on the outer borders of this site, affording a spacious central area. That on the river side is 1,000 feet in length and 40 feet in breadth, with two wings, at right angles, at the ends, 240 feet by 40 feet, and outer porches for ingress and egress. The whole is three stories in height, excepting the centre,—52 feet by 42 feet,—which is five stories high. On the side next the canal is another line of buildings, 800 feet in length, 38 feet in width, and 2 stories in height, designed for counting-rooms, store-houses, watch-houses, and other purposes. Within the interior the three principal mills are erected, each 200 feet by 48 feet 8 inches, containing, including the basement and the attic, 9 working floors. All these mills are substantially built of brick and covered with slate. The rooms are 11 to 13 feet in height; and are warmed by steam and lighted with gas. The apparatus for warming consists of wrought iron pipes, 1 or 3-4 inches in diameter, placed in three, four or five parallel lines around the interior of the building, immediately under the windows in each story, maintaining in all the rooms, at all times, a uniform temperature of about 68 degrees. A structure to supply the steam is situated in each wing of the river building, and has twelve boilers and a chimney 135 feet in height. All the rooms are provided with hydrants, to which force pumps and hose are attached, that may be used in case of fire, for washing, and other purposes. A person is employed in each room to keep every part of it and the stairways clean. Each mill is also provided with extra porches,—one in front and the other in the rear,—and with four iron ladders reaching from the bottom to the top, for ascent or descent in case of fire, or for any other purpose. The motive power for these mills is obtained from seven breast-wheels of the first class, 23 feet 4 inches in length, 26 feet in diameter, and of 125 horse-power each; two of which are placed in each principal mill, and one in the river mill. Eight mill-powers were purchased by this company.

The boarding-houses are on the opposite side of the canal, and consist of four blocks, substantially built of brick and covered with slate, each 250 feet in length, 36 feet in breadth, 3 stories high, of 10, 9 and 8 feet respectively; with 4 L's in the rear, 1 story high, to each block. Each block contains 8 tenements; and each tenement, except the end one, is 33 1-3 feet in width and 36 in depth exclusive of the L, and contains 20 rooms, including the attic; and is designed to accommodate 36 boarders. The location and the size of the rooms will appear from the accompanying plan and illustration. The end houses are 25 feet in width, a little smaller than the others. The houses in each block, excepting the end ones, are like that on the right of the plan here presented. As you enter this tenement on the left, there is a small room appropriated exclusively to the mistress of the house. At the right are two dining-rooms, connected by folding doors, each forming pleasant sitting-rooms at other than meal times. Passing through the entry

you enter the kitchen, which is furnished with all necessary conveniences. Beyond this is the back kitchen, containing a large boiler and conveniences for various other household purposes. In the rear of this is the wash-room, from which you pass into a large yard, enclosed by a high tight fence, having at the end the wood-shed, 14 feet wide, and the privies ; the whole bordering on a common passage way, 14 feet wide. Under each alternate fence is a double cess-pool, serving for two houses, and having an underground passage leading to the common sewer under the sheds. A well of pure water is connected with every four tenements, and all are supplied with soft water, for washing and other purposes, by cast iron pipes, leading from cisterns in the mills to the sinks in the several houses. On the second floor is the parlor, and also a sick room,—a small chamber with a fire-place, designed for an invalid who may need seclusion and extra warmth. Besides these are sleeping apartments for the boarders in the second and third stories, and in the attic, designed to accommodate 2, 4 or 6 persons each, according to the size of the room. Each tenement cost about $4,000 exclusive of the land; and will compare to advantage with respectable dwelling-houses in Boston, and are much better than the average in country villages.

To protect the health of the inmates, underground sewers are constructed, under the sheds, in the rear of each block, through which a current of water, supplied by iron pipes connected with the canal on the left, or above the block, is constantly running, carrying off all the contents of the privies, cess-pools, and other filth ; and passing at right angles under the canal, discharging them into the river, preserving the houses perfectly free from offensive smells. A plan of these sewers may be seen in the accompanying illustration. *Thirty thousand dollars* was expended by this company in their construction alone, for the benefit of the health of the operatives !

Labor begins, or the gate closes, at 5 o'clock, A. M., from May 1 to September 1 ; and at ten minutes before sunrise, the remainder of the year. A first bell is rung about 40 minutes before, to allow time to prepare for work. *Labor ends* at 7½ P. M., from September 20 to March 20 ; at 7, from May 1 to September 1 ; and at 15 minutes after sunset, for the remainder of the year. It is intended to secure, on the average, 12 working hours, each day. *Breakfast* is served at 7 A. M., from April 1 to September 20 ; and at 7½ for the remainder of the year. *Dinner* during the whole year at 12½ M. 45 minutes are allowed for each meal.

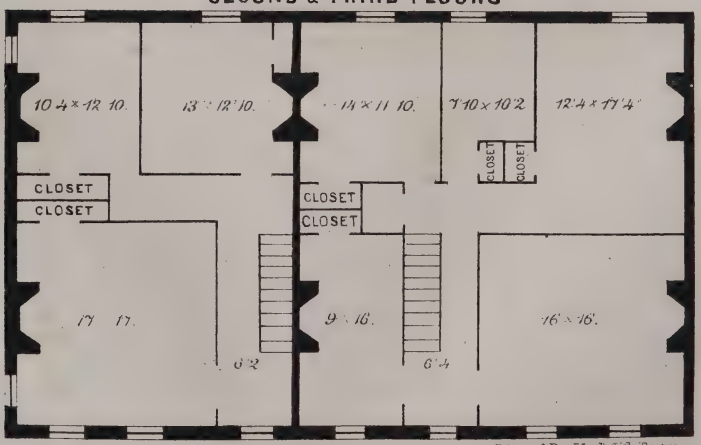
The number of operatives at present employed in these mills is 1,867, of whom 956 are males and 911 are females. When entirely completed and in full operation, they will employ about 2,500, and require a town population of 7,500. The principal part of the operatives work by the job ; the males earning on the average about $5 80 per week, and the females about $2 75 per week, besides board, which is $1 50 to $2 00 per week for males, and $1 25 for females. The females are principally inmates of the boarding-houses. Most of the males, however, at present have houses of their own, or board elsewhere.

The boarding-houses for the accommodation of the operatives in these mills, as in other manufacturing establishments, are owned by

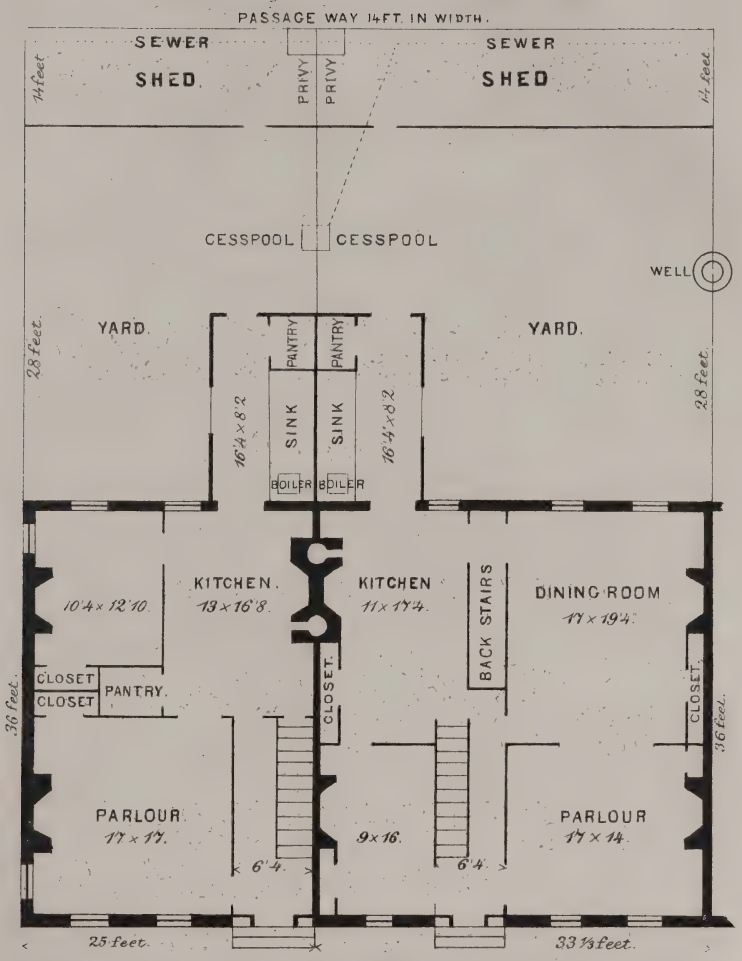
PLANS OF THE BOARDING HOUSES BELONGING TO THE BAY STATE MILLS IN LAWRENCE.

END HOUSE IN THE BLOCK. SECOND HOUSE IN THE BLOCK

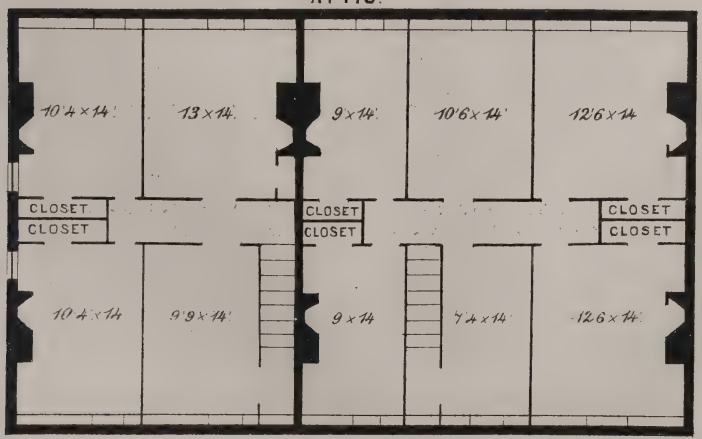
SECOND & THIRD FLOORS



Tappan & Bradford Lith. Boston.


PASSAGE WAY 14FT. IN WIDTH.
SEWER
SHED.
PRIVY
PRIVY
SEWER
SHED
14 feet.
14 feet.
CESSPOOL
CESSPOOL
WELL
YARD.
YARD.
28 feet.
28 feet.
PANTRY
PANTRY
SINK
SINK
16'4 x 8'2
16'4 x 8'2
BOILER
BOILER
KITCHEN.
13 x 16'8.
KITCHEN
11 x 17'4.
BACK STAIRS
DINING ROOM
17 x 19'4.
10'4 x 12'10.
CLOSET
CLOSET
PANTRY.
CLOSET.
CLOSET.
36 feet.
36 feet.
PARLOUR
17 x 17.
9 x 16.
PARLOUR
17 x 14.
6'4.
6'4.
25 feet.
33 1/3 feet.

ATTIC.


10'4 x 14'
13 x 14.
9 x 14.
10'6 x 14'
12'6 x 14
CLOSET
CLOSET
CLOSET
CLOSET
CLOSET
CLOSET
10'4 x 14
9'9 x 14'
9 x 14
7'4 x 14
12'6 x 14

the corporation. They have been erected, not for an investment of capital on which a profitable income is to be anticipated, but as a means of preserving a proper supervision over the operatives employed, and for their benefit. Boarding-houses of this kind generally afford less than 4 per cent. interest on the capital invested. Some afford no income at all, and even become an annual expense to the owners. They are kept in repair and rented to the tenants, subject to such regulations and restrictions as the company see fit to establish. The rent and the price of board are fixed by the company; but both are subject to such alteration as the circumstances of the times, and of all the parties interested, shall render just and proper.

The tenants of the Bay State boarding-houses now pay $150 each, annually, as rent, which is about *three per cent.* on the cost. The furniture of the houses is obtained and owned by the tenants themselves; and they furnish provisions and other articles of consumption for the inmates. They now receive $1 25 per week for the board of females, and $1 75 to $2 00 for males. The fare provided is of a plain, substantial and wholesome kind, well prepared, neatly served, and in sufficient quantities. Operatives are under no compulsion to board in one tenement rather than in another; it is for the interest of the boarding-house keepers, therefore, that the bill of fare should be attractive and satisfactory. The keepers are sometimes men with wives and families; but they are generally widows, or females who have been accustomed to perform the principal part of the business of providing for their families, and who desire a remunerating means of subsistence. Applications for these situations are generally numerous, but they can be obtained by none but persons of known capacity and respectability. And whenever indications of a different character are manifested, the obnoxious keeper is immediately ejected. Males and females are not allowed to occupy the same house, not even a man with his wife, as boarders.

Several classes of regulations to be observed by the inmates of these houses, are printed and placed conspicuously in each house. One code is as follows:—

I. The tenants must not underlet any part of their tenements, nor board any persons not employed by the company, unless by special permission; and, in no case, are males and females to board in the same house.

II. The tenants must, when required by the agent, give a correct account, in writing, of the number, names, character, habits and employment of their boarders; and whether they are habitual attendants on public worship. They must, also, on the first Monday of every month, send to the counting-room, a list of all the boarders they have taken, and of all who have left their houses, during the preceding month. They must, also, at the same time, render a list of the names of all such boarders as have required the services of a physician, on account of sickness, during the same period.

III. The doors must be closed at 10 o'clock in the evening, and no one admitted after that time, unless some reasonable excuse can be given.

IV. The boarders must not be permitted to have company at unseasonable hours.

V. All improper conduct among the boarders, and all rude and disorderly deportment, must be prevented by the tenants, if possible, and if persisted in, must be reported to the agent.

VI. It is confidently expected, that all children over twelve, and under fourteen years of age, living in the houses, be kept constantly at school.

VII. It is indispensable, that all who live in the houses should be vaccinated, and this will be done, at the expense of the company, by a physician, at the counting-room, for all those employed by the company, and for the families of the tenants.

VIII. The health of the inhabitants requires that particular attention should be paid to the cleanliness and daily ventilation of the rooms.

IX. Neither water, nor filth of any kind, must be thrown out in front of the houses, nor be allowed to remain in the cellars, back-yards or sheds.

X. Ashes must not be kept in wooden vessels, nor will any carelessness be allowed in the use of fire or lights. Neither camphene, nor any other explosive compound used for lights, will be allowed on the premises.

XI. The rooms must not be mutilated, nor defaced; and, in all cases, where the plastering of the walls is broken, either by driving in nails, screws, or pins, or by rubbing with furniture, or by any carelessness, or by any other means beyond ordinary use and wear, the injury will be repaired, and the cost thereof charged to the person leasing the house.

XII. A suitable chamber for the sick, must be reserved in each house, so that they may not be annoyed by others occupying the same room.

XIII. Window glass must not be allowed to remain broken, longer than one day.

XIV. Wood and coal will not be permitted to be taken into the cellars, nor from them, through the front windows.

XV. The closest supervision will be exercised to enforce these rules, and the tenants themselves are particularly required to pay close attention to them, and to insist upon their observance on the part of their boarders.

XVI. No tenement will be leased to persons of immoral or intemperate habits, and any tenant, who, after occupancy, shall be found to be of such habits, or to receive boarders of such habits, will be notified to vacate the premises.

☞ *The tenants are particularly desired to lend their aid in the preservation of the trees in front of the houses, and to give immediate information to the agent, if any injury be done them.*

Similar regulations are issued by the Atlantic Cotton Mills, besides an additional code, one section of which is the following:—

A proper observance of the Sabbath being necessary for the maintenance of good order, all persons in the employ of this company *are expected to be constant in attendance at public worship*, and those who habitually neglect this regulation, or whose habits shall be found to be intemperate, or otherwise irregular or incorrect, or who are known to attend improper places of amusement, will be discharged.

The execution of these and other police regulations of the whole establishment, is entrusted to the general agent and a sufficient number of subordinate overseers, who are daily present at the mills. The agent is required to be a man who, by his known capacity, his experience, and his character, is fitted for the station. Under his wise and systematic supervision, the boarding-houses, and all the departments of these extensive mills, are managed with the same care as a small, well-regulated family.

The influence of the system by which the boarding-houses are regulated, is immensely beneficial, whether we consider it in a social, moral, or sanitary point of view. It is an influence which is felt by all the operatives, at all times, while they are out of the mills as well as in them. In the boarding-houses too, a care, attention and oversight, is frequently exerted by the landlady over her boarders, which is nearly allied to that which a kind parent exerts over her children, and which produces almost as strong a mutual attachment in the one case as in the other.

The Lawrence Gas Company commenced operations January 1st, 1849. The mills, streets and public buildings are now lighted with gas, and it is to be extended as needed. The gas establishment is on the banks of the Merrimack, below the populous part of the town and the entrance of the Spicket, that no inconvenience may be experienced from its drainage or otherwise. Besides the establishments already noticed, there are several others of minor importance,—among which may be mentioned, a card clothing manufactory, a large piano manufactory in the northwest part of the town, and works for the manufacture of paper hangings. No slaughter-house, nor any manufactory unfavorable to the health of the inhabitants, is permitted near the centre of the town.

The return of the assessors, for the State Valuation in 1850, di-

vides the lands of the town into 60 acres of tillage land; 214 of English and upland mowing; 33 of fresh meadow; 202 of pasturage; 408 of woodland; 2,702 of unimproved land; 62 of unimprovable; 300 used for roads; and 374 covered with water. This gives a total of 4,355 acres, or 19 less than the survey as stated, page 437.

The annual agricultural produce of these lands is stated at 20 bushels of wheat; 32 of rye; 350 of oats; 350 of Indian corn; 159 tons of English hay, and 17 tons of meadow hay; and there were in the town 185 horses, 37 oxen, 107 cows, and 58 swine.

3. *Number and Condition of the Inhabitants.*

At the first enumeration of the inhabitants, made February, 1847, Lawrence contained 3,577; of whom 2,289 were males, and 1,118 females; 1,271 lived in Irish dwellings. At the second enumeration, made January, 1848, it contained 5,949, of whom 3,750 were Americans, 2,130 Irish, 28 English, 16 other foreigners, and 16 colored persons. At the third enumeration, September, 1849, it contained 7,225. The State Census, May, 1850, gave 8,358, living in 1,416 families, or an average of 6 to a family; of whom 7,620 were on the north and 738 on the southern side of the Merrimack. Legal voters, March, 1850,—south side of the river, 84, north side, 993, total, 1,077. Militia enrolled, 1,031. An abstract of the United States Census, just completed, gives 8,500 inhabitants, living in 1,415 familes, and 1,061 tenements; averaging 6 to a family and 8 to a tenement. The following is an abstract of this census, furnished us by the assistant marshal:—

Ages.	Males.	Females.	Both.
Under 5,	467	437	904
5 to 10,	346	345	691
10 to 15,	278	339	617
15 to 20,	378	609	987
20 to 30,	1,007	1,487	2,494
30 to 40,	595	572	1,167
40 to 50,	298	272	570
50 to 60,	122	109	231
60 to 70,	41	44	85
70 to 80,	14	16	30
80 to 90,	3	0	3
Total,	3,549	4,230	7,779
Under 15,	1,091	1,121	2,212
15 to 60,	2,400	3,049	5,449
Over 60,	58	60	118
Total,	3,549	4,230	7,779
Persons whose ages are not specified,			721
Total population,			8,500

Place of Birth.	Number.
Massachusetts,	2,266
Maine,	919
New Hampshire,	1,486
Vermont,	350
Rhode Island,	18
Connecticut,	37
New York,	75
New Jersey,	4
Pennsylvania,	12
Other States,	18
Foreigners,	2,554
Unknown,	761
Total,	8,500
Colored persons,	14
Insane,	3
Deaf and dumb,	5
Number between 5 and 15, is here stated at 1,308; number returned by school committee, in May,	1,180

The whole population in the manufacturing towns, averages about three times the number of the operatives employed. According to this

rule, when the mills now existing or are in the process of erection are in full operation, Lawrence will require about 5,000 operatives, and a town population of 15,000; and those that are projected, but not yet commenced, will require about as many more.

The names, dates of commencing business in the place, and other interesting particulars concerning professional and other occupations, are presented in "The Lawrence Courier," the oldest weekly newspaper of the town, for February, 1847, January 8, 1848, and April 4, 1849. It appears that the first mechanic came into town, May 15, 1845; the frame of the first dwelling-house was raised September 12, 1845; the first attorney came March 10, 1846; the first physician, October, 1845; the first apothecary, June 24, 1846; the first printing was done September 26, 1846; and the first newspaper was issued October 9, 1846. The "Essex County Sentinel" was first issued September 2, 1848. The Post Office was established August, 1846.

The first public tax in Lawrence was assessed in 1847. The aggregate valuation of the real and personal property, estimated at its market cash value; the number of ratable polls; the amount of the taxes assessed; the rate per cent., or the number of cents on $100 of the valuation; and the average amount on each poll, and on each inhabitant, in different years, have since been as follows:—

Year.	Aggregate Valuation of the Property.			Number of Ratable Polls.	Amount of Taxes assessed	Proportion on each.		
	Real.	Personal.	Total.			$100.	Poll.	Inhabitant.
1847	$1,563,045	$156,159	$1,719,204	1,679	$7,871 75	$0.39	$4 62	$2 20
1848	3,466,586	347,840	3,814,426	1,730	18,610 39	0.42	10 75	3 12
1849	4,781,950	948,760	5,730,710	2,262	25,790 94	0.39	11 40	3 17
1850	4,890,264	1,012,477	5,902,741	2,249	32,243 41	0.49	14 31	3 85

It appears from this statement, that each $100 value of the property paid 39 cents, in 1847, and 49, in 1850; that for each ratable poll was paid on the average $4.62, in 1847, and $14.31, in 1850; and that for each inhabitant of the whole town was paid, on the average, $2.20, in 1847, and $3.85, in 1850. The greatest proportion of the taxes is paid by the manufacturing property.

The taxes paid by the incorporated companies within the town, for the last three years, are as follows:—

Companies.	In 1848.	In 1849.	In 1850.
Essex Company,	$4,950 96	$7,400 25	$8,590 85
Bay State Mills,	3,028 20	3,637 34	6,614 99
Atlantic Cotton Mills,	2,100 00	4,291 17	5,031 56
Bay State Bank,	54 60	50 70	78 40
Boston and Maine Railroad,	21 00	276 90	296 74
Essex Railroad,	.	35 10	24 50
Gas Company,	.	.	245 00
	$10,154 76	$15,691 46	$20,882 04
Proportion per cent. of whole tax,	54.56	60.84	64.76

If any argument were necessary, at this day, to show that corporations are in many respects beneficial to the people, these facts furnish a conclusive one. Here is an instance where more than one half, (and for this year, $20,882 04 of the $32,243 41, or 64.76 per cent.—nearly *two-thirds*,)—of all the public taxes raised by the town, for the social, pecuniary, educational, moral, and sanitary welfare of the whole people, is paid by the corporations established within it. These corporations give employment and means of subsistence to a large portion of the population of the town, and create a market for the agricultural products of the neighborhood, and thus diffuse their beneficial influence among all classes. This is a direct, positive good, obvious to every one. They also deposit in the town foreign capital, or capital not previously existing there, to be publicly taxed for the general good. This, though a less obvious, is none the less a great public blessing; and contributes to the general welfare and sanitary improvement of the people.

The following statement exhibits an abstract of the income and expenditures of the town, for the last two years, ending the first of March; and specifies the sources from which the income was derived, and the purposes for which the expenditures were made:—

INCOME.

	March 1, 1849.	March 1, 1850.
From Taxes,	$18,011 89	$24,329 97
Rents,	.	472 64
Fees and licenses,	79 00	12 00
State School Fund,	99 82	174 24
State paupers,	516 82	2,833 88
Loans,	24,892 55	35,662 60
Balance of last account,	.	81 45
	$43,600 08	$63,566 68

EXPENDITURES.

For Public buildings,	$8,000 00	$27,174 09
Schoolhouses,	13,370 16	10,129 24
Schools,	4,061 81	5,895 79
Roads and bridges,	2,711 03	3,552 98
Health,	553 31	335 75
Fire department,	3,480 84	4,852 19
Pauperism,	3,522 16	3,622 14
Police,	631 24	437 55
Militia,	.	723 00
County tax,	614 90	614 90
Interest,	975 01	2,597 56
Contingent,	5,598 17	2,504 07
Balance on hand,	81 45	1,127 42
	$43,600 08	$63,566 68

This statement shows that appropriations and expenditures have been made in this town, for various public purposes, with great liber-

ality. It has been considered wise policy and good economy, in making these expenditures, even at the risk of creating a public debt, to keep in view, not merely the wants of the present inhabitants, but of those who may, according to reasonable anticipations, hereafter, within a few years, become inhabitants. In establishing a new town like this, accommodations must be provided for transacting the public business, for public schools, and for various other purposes. Such buildings have now been constructed; and no considerable expenditure will be needed on that account for years to come. It is intended that all current expenses shall hereafter be paid by current income; and that the town debt shall be cancelled by annual instalments and by a sinking fund.

The Public Schools of Lawrence are—1. Primary Schools, for the education of children under 7 years of age; 2. Middle Schools, for those between 7 and 10; 3. Grammar Schools, for those between 10 and 12; and, 4. a High School, for those over 12. The classification of the scholars depends, however, upon their qualifications to be transferred from a lower to a higher grade of schools. Where it is impracticable, on account of locality or other causes, to divide the children under 10, into middle and primary schools, they are associated in what are termed mixed schools. We gather the following facts regarding the schools, from the returns of the school committee to the Board of Education, on the first of May, in each year specified :—

	In 1848.	In 1849.	In 1850.
Childen in town, between the ages of 5 and 15,	620	1,089	1,180
Number of public schools,	8	11	15
Number of scholars at the schools,	825	1,050	1,006
Average attendance,	615	651	939
Number of teachers,	7	13	16
Money raised for the support of schools,	$2,000	$3,750	$6,602
Average for each child between 5 and 15,	$3 23	$3 44.4	$5 59.5
School rank of the town in the county,	4th.	4th.	1st.
School rank of the town in the State,	55th.	55th.	19th.

The following statement, furnished us by the secretary of the school committee, shows the state of the schools October 1, 1850 :—

Number of Schools.	Male Teachers.	Female Teachers.	Scholars.	Annual Expense.	For each Scholar.
7 Primary schools,	0	9	599	$2,375	$3 96
2 Mixed schools,	0	2	95	570	6 00
5 Middle schools,	0	5	250	710	2 84
2 Grammar schools,	2	5	330	3,075	9 31
1 High school,	1	1	53	1,300	24 52
Total and average,	3	22	1,327	$8,030	$6 05

The female teachers receive $225 salary each, per annum; the teachers of the grammar schools, $700, and of the high school, $800. All the schools are kept the whole year, except two weeks of vacation in winter, and four in summer. It appears by this statement, that the annual expense of educating each scholar, on the average for all the schools, is about $6; in the primary schools, $3.96; and in the high

school, $24.52. This town was fourth in rank in the county, in 1849,—Salem, Newburyport, and Essex, only, being higher; and it was *first* in 1850, having paid for education, at the rate of $5.59½ for every child in the town, between the ages of 5 and 15 years. The admirable school system and the schools of Lawrence, have been justly commended for their elevated character and rank.

A bank, with a capital of $300,000; a savings bank, in which the deposits are rapidly increasing; and a mutual fire insurance company, exist in this town. Railroads intersect at this place, which form a direct connection with Boston, Salem, Lowell, and various other places in this and the neighboring states, and afford all needful means of intercommunication.

Two military companies, the Lawrence Light Infantry and the Lawrence Mechanic Rifle Company, have been organized, each containing about 50 members.

The Franklin Library received from Hon. Abbott Lawrence $1,000, which has been increased by other donations. It has already a collection of valuable scientific and miscellaneous works. An able course of scientific and literary lectures is given annually, before the lyceum of the town.

The inhabitants enjoy comfortable means of subsistence, and their general character is industrious and temperate. The greatest proportion of the intemperance, pauperism, crime, and disease, which has existed in the town, has been among the transient population. There are six public houses, either hotels or taverns, at all of which intoxicating liquors *may* be obtained. No licenses, however, for their sale, are granted.

The average compensation for mechanical labor is, for carpenters, $1.37½ per day; for masons, $1.75 per day, without board. For common American laborers, $1.00; Irish, 70 to 80 cents. Building materials are abundant, at reasonable prices. The prices of provisions are about the same as in Boston. Coal is $7.00 per ton—firewood $3½ to $6 per cord.

In the year ending March 1, 1849, the overseers of the poor paid for the partial or entire support of 243 persons, expending $3,771 56. This is nearly 1 pauper to 27 inhabitants; and 50 cents for each inhabitant. The number returned to the State, November 1, 1849, was 455. For the year ending March 1, 1850, the town paid for 3,792 days of pauper support, which is equal to the support of a little more than 10 persons during the whole year. The number actually in the poor-house, July, 1850, was 14; of whom 8 were foreigners—3 adults and 5 children; and 6 were Americans—3 adults, and 3 children.

For the year ending October, 1850, the number of persons convicted before the police court of Lawrence, was 270; of this number, 127 were convicted for drunkenness, 43 for assault and battery, 21 for simple larceny, 19 for disturbing the peace, 18 for selling spirituous liquors, 9 for violating the Sabbath, 7 for assaults on officers, 7 for assaults on females, 5 for obtaining goods on false pretences, 2 for lewd and lascivious behavior, 2 for wilful trespass, 2 for larcenies in dwelling-houses, and 1 each for receiving stolen goods, for store-breaking, for arson, for rape, for bigamy, for adultery, and for conspiracy.

A very large proportion of these criminals were transient persons,

who had arrived but a short time before their arrest. All but 12 of those convicted for drunkenness and for disturbing the peace, were of this character. A marked improvement is said to have taken place among the Irish population, during the past year; and very few of this class have been arrested for crime.

The following statement will exhibit the religious opinions and institutions of the people of Lawrence :—

Denominations.	When Organized.	Cost of Churches.	Sittings.	Annual Exp. of Pub. Wor.
First Orthodox Congregational,	Aug. 3, 1846,	$12,000	1,200	$1,200
Second " "	Dec. 19, 1849,		Worship in Hall,	1,450
Episcopalian,	April 29, 1847,		Worship in Vestry,	1,000
Unitarian,	Aug. 30, 1847,	$3,000	900	1,500
Baptist,	Aug. 17, 1847,	9,000	800	1,000
Methodist,	June 1846,	6,000	800	800
Universalist,	Nov. 15, 1847,		Worship in Hall,	600
Freewill Baptist,	April 1846,	$3,000	500	600
First Roman Catholic,	April 1846,	1,500	200	600
Second " "	Dec. 1848,	4,000	1,200	1,000

It appears by this statement, that about $10,000 is annually contributed by voluntary donation for religious instruction. Flourishing Sabbath schools exist in all the churches. The Roman Catholics are building a stone church to cost over $30,000.

4. *Municipal Regulations and Sanitary Police.*

The municipal government of the town consists of 3 selectmen, a town clerk, a treasurer, 3 assessors, 5 school committee-men, and several other subordinate officers, all chosen in March, annually. The selectmen act as a board of health, and as overseers of the poor. The police is composed of 1 deputy sheriff, 5 constables, 1 coroner, and 24 night and day watch and police. The watchmen are paid 20 cents per hour, while on duty. A special act establishing a police court was passed May 5, 1848. A fire department was also incorporated May 10, 1848, the members of which receive 25 cents per hour, while on duty. The selectmen, as a board of health, have issued the following code of rules and regulations :—

In accordance with the 21st chapter of the Revised Statutes of the Commonwealth of Massachusetts, the following regulations were established at a meeting of the board, for the health and safety of the inhabitants of Lawrence :—

ART. I. Every tenement in the town, used as a dwelling-house, shall be furnished with a suitable receptacle under ground to carry off the waste water—and also with a privy, the vault of which shall be under ground—to be built in the manner prescribed in the fourth article of this chapter, and of sufficient capacity in proportion to the number of inhabitants of such tenement.

ART. II. When the board of health shall be satisfied that any tenement, used as a dwelling-house, is not furnished with a sufficient receptacle, privy or vault, or either of them, they shall give notice, in writing, to the occupant, owner or his agent, requiring that a suitable receptacle, privy or vault, or either of them, be constructed within such time as they shall appoint, for the use of such tenement; and in case such requisition be not complied with, the board shall cause such receptacle, privy or vault, or either of them, to be constructed, the expense of which shall be charged to such occupant, owner or agent.

ART. III. Whenever the board of health shall find that the number of persons occupying any tenement is so great as to be the cause of nuisance or sickness, or a source of filth; or whenever any tenement is not furnished with a suitable privy, vault and receptacle under ground, according to the provisions of this chapter, the board may cause all or any persons occupying such tenement to be removed therefrom—first giving them notice, in writing, to remove, and allowing them the space of at least forty-eight hours, in which to comply with said notice.

ART. IV. All vaults and privies hereafter built, shall be so constructed that the inside of the same shall be at least two feet distant from the line of every adjoining lot, unless the board of health, or the owner of said adjoining lot shall otherwise agree and consent, and also from every street, lane, alley, court, square, or place, or public or private passageway; there shall be no communication between any vault or privy, and any common sewer

or drain, and every vault shall be at least five feet deep from the surface or grade of the surrounding land, and shall be constructed of brick or stone, laid in cement, or of good plank, at least two inches thick, and to be made water tight—and all vaults or privies already constructed, not conforming to the foregoing, shall, within thirty days from the date hereof, be so altered, repaired, or rebuilt, as to conform to the above requirements; and whenever any vault or privy shall become offensive, the same shall be cleansed, and the owner or his agent, or the occupant of the land in which any vault or privy may be situated, the state and condition of which shall be in violation of the provisions of this article, shall cause the same to be removed, cleansed, altered, amended, or repaired, within a reasonable time after notice, in writing, to that effect, given by the board of health; and in case of neglect or refusal, the same shall be performed under the direction of the board of health, at the expense of the owner, agent, or occupant aforesaid.

ART. V. No vault shall be opened between the 15th day of May and the 14th day of October, in each year, unless on inspection caused to be made, the board of health shall be satisfied that the same is absolutely necessary for the health or comfort of the inhabitants; in which case they may grant special permission, under such restrictions as they may deem expedient; and no vault shall be opened at any time during the year, until 10 o'clock, P. M.

ART. VI. Whenever it shall appear to the board of health that any cellar, lot or vacant land is in a state of nuisance, or so situated that it may become dangerous to the public health, they may cause the same to be drained, filled up, or otherwise prevented from becoming or remaining a cause of nuisance or sickness, and shall charge all reasonable expenses incurred in so doing, to the several owners, or parties occupying such cellar, lot, or vacant land: *provided*, notice shall have been first given, and the space of forty-eight hours thereafter allowed, as provided in the second article of this chapter: *provided*, that if no owner or occupant is known to the board of health to be a resident in the town of Lawrence, notice shall be given at least two weeks, in one or more of the newspapers of said town of Lawrence.

ART. VII. No person or persons shall throw or deposit, or cause to be thrown or deposited, in any street, court, square, lane, alley, public square, or vacant lot, or into any water, any dirt, sawdust, soot, ashes, cinders, shavings, hair, shreds, manure, oyster or lobster shells, waste water, rubbish, or filth of any kind, or any animal or vegetable matter or substance whatever.

ART. VIII. No person shall bring into the town for sale, nor offer for sale, any diseased, unwholesome, stale or putrid meat, fish, or other articles of provisions, nor any fish, except salmon and shad, and except smelts and other small fish, that shall not first have been cleansed of their entrails and refuse parts.

REVISED STATUTES—[Chap. 21. sec, 5:]—"The board of health shall make such regulations respecting nuisance, sources of filth, and causes of sickness, within their respective towns, as they shall judge necessary for the public health and safety.

And if any person shall violate any such regulations, he shall forfeit a sum not exceeding one hundred dollars.

All persons will hereby take notice that the above rules and regulations must be strictly complied with.

Whenever a complaint is made against any person for a violation of these regulations, a notice, containing a copy, is served upon such violator, and he is required to remove the nuisance in 48 hours.

Lawrence has two places for the interment of the dead. One, containing five acres, lies in a pine grove, about a mile from the town-house, and was bought by the town of the Essex Company, for $1,000. It is beautifully laid out, intersected by avenues and paths, and divided into family lots, 10 by 14 feet, and into single graves; the whole designed to furnish burial accommodations for about 5,000 bodies. Each family lot, and each single grave, is numbered and marked, and a record is made of the persons interred therein. The right of burial for a single grave is free. A family right, 10 by 14 feet, for 8 graves, is sold for $3.00. The ordinary expenses for interment are,—for a good pine coffin, $4.00; digging the grave and the undertaker's fees, $3; total, $7, besides carriages. A greater amount, of course, is sometimes expended. The other is a *Catholic ground*, and contains 3 acres. It is the private property of Rev. Charles D. French, the eldest Catholic priest in the town. Rights for burial for single graves in this ground, are sold at $5.00 for adults, and at $3.00 for children. A "family right," or a right to dig any depth and deposit as many bodies as one pleases,

one upon the top of another, is sold for $9.00! Charity graves are sometimes granted.

5. *Health, Sickness, and Mortality of the Inhabitants.*

The records of births, marriages, and deaths, were commenced May 1, 1847, and have since been continued. For the last eight months of 1847, and the two subsequent years, we obtain the following abstract of these records:—

	May to Dec. 31, 1847.	In 1848.	In 1849.	Total.
Births, . . .	139	185	61	325
Marriages, . .	19	81	40	130
Deaths, . . .	84	83	162	329

The records of births and marriages are imperfect. Of the births recorded, 193, or more than 50 per cent., were of children of foreign parents. Some of the deaths are supposed not to have been recorded, in 1847 and 1848; but for 1849, all are supposed to have been entered. In 1848 there was one recorded death to 71 inhabitants; and in 1849 there was one to 44. Assuming this as a means of comparison, it will show, in the last year, an excess of about 50 deaths above a healthy standard.

The aggregate and average ages of all whose ages are specified in the records, was as follows:—

Date.	Deaths of Persons whose Ages are known.	Aggregate Ages.	Average Ages.
1847,	79	1,819 yrs. 6 ms. 14 ds.	23 yrs. 0 ms. 11 ds.
1848,	79	1,317 " 0 " 23 "	16 " 8 " 2 "
1849,	156	2,082 " 6 " 7 "	13 " 4 " 4 "

The specific divisions of ages exhibit the following results:—

Ages.	Males.	Females.	Total.	Proportion.
Under 15, . . .	63	65	128	40.8
15 to 60, . . .	71	73	144	45.8
Over 60, . . .	21	21	42	13.4
Total, . . .	155	159	314	100

And in the different seasons of the year they were, as far as specified, as follows:—

Quarter.	Under 15.	15 to 60.	Over 60.	Total.	Proportion.
Winter quarter,	25	25	2	52	17.5
Spring quarter,	34	22	1	57	19.2
Summer quarter,	79	48	5	132	44.4
Autumn quarter,	26	28	2	56	18.9
Total, .	164	123	10	297	100

The causes of death, as far as specified on the records, are exhibited in the following statement:—

Causes of Death.	Males.			Females.			Total.
	Under 15.	15 to 60.	Over 60.	Under 15.	15 to 60.	Over60.	
SPECIFIED CAUSES.	55	67	18	57	67	18	282
1. Zymotic Diseases, . .	26	36	5	35	16	6	124
2. Of uncertain seat, . .	1	.	3	1	4	.	9
3. Of the Nervous Organs, .	4	2	.	9	3	1	19
4. Of the Respiratory Organs,	10	13	1	8	30	4	66
5. Of the Circulative Organs,	.	1	.	.	.	.	1
6. Of the Digestive Organs, .	9	3	5	2	4	6	29
7. Of the Generative Organs,	.	.	.	.	9	.	9
8. Of Old Age, . . .	.	.	3	.	.	1	4
9. Accidental Deaths, . .	5	12	1	2	1	.	21
Total specified, . .	55	67	18	55	67	18	282
Causes not specified, . .	8	4	3	8	6	3	32
Total, ...	63	71	21	65	73	21	314

The specific diseases and causes of death, as stated in this table, are as follows :—

1.

Cholera Morbus, .	5
Cholera Infantum,	4
Croup, ...	4
Dysentery, . . .	26
Typhus Fever, .	52
Hooping Cough, .	2
Influenza, . . .	2
Measles, ...	11
Scarlatina, . . .	18
Total, . .	124

2.

Dropsy, ...	6
Hæmorrhage, . .	1
Scrofula, . . .	2
Total, . . .	9

3.

Apoplexy, . . .	2
Convulsions, . .	7
Disease of Brain, .	10
Total, . . .	19

4.

Consumption, . .	58
Pnuemonia, . .	7
Pleurisy, . . .	1
Total, . . .	66

5.

Disease of Heart, .	1

6.

Gastritis, . . .	2
Canker, ...	6
Disease of Bowels,	13
Jaundice, . . .	1
Teething, . . .	7
Total, . . .	29

7.

Child-birth, . .	9

8.

Old Age, . . .	4

9.

Accidents, . .	15
Intemperance, . .	3
Want, ...	3
Total, . . .	21
Not specified, . .	32
Still-born, . . .	8

It will be seen by this statement, that typhus fever, dysentery, scarlatina, and measles, among the greatest epidemics of the State, and consumption, the most to be dreaded of all diseases, have prevailed here to a large extent, producing, respectively, 52, 26, 18, 11, and 58, of the total mortality of 282 cases in which causes are specified. Of the fever victims the greatest proportion have been males in the productive periods of life, some of whom were laborers on the public improvements. A majority of the deaths by consumption, were those of

females in the same period. No case of Asiatic cholera has occurred in the town.

Since the foregoing abstract was prepared, a record of the deaths during the 6 months, ending July 1, 1850, has been obtained, from which it appears that 59 deaths took place during that period,—31 males and 28 females. Their aggregate ages were 1381 years, 5 months, 10 days, and their average age 23 years, 5 months. Of these, 14 died of consumption—7 males and 7 females,—7 were Americans and 7 foreigners; 9 died of typhus fever—5 males and 4 females, all Americans but 2; and 7 died of *small-pox*—4 males and 3 females—all Americans but one, and whose deaths were traceable to a neglect of vaccination. These three diseases were the causes of more than half the deaths.

6. *Conclusions and Recommendations.*

The *conclusions* to which the foregoing facts lead are:—

1. That the natural situation of Lawrence, its dry soil, its waters, and its general features, seem to be favorable to the promotion of health. The town is, however, as yet, too young, and observations have been too limited, to determine its true sanitary character.

2. That in the artificial and local arrangements for the manufacturing establishments and their accompanying structures, in the plan and location of the streets of the town, in the dwelling-houses, and in the public squares and public buildings, many of the most approved principles of sanitary science have been introduced.

3. That the pecuniary, social, and moral welfare of the operatives in the mills, is as well cared for here as in any place within our knowledge. Their house accommodations, means of subsistence, and the moral and sanitary supervision under which they act, cannot be too highly commended.

4. That the public educational, and other institutions of the town, and the social condition of the inhabitants, are such as must contribute to their general welfare and improvement, physical, intellectual and moral.

5. That the facts regarding the mortality of the town, especially for the last year, exhibit a remarkably low average age at death. This is not to be taken, however, (for the reasons we have already given in this Report, pp. 139, 140) as an exact test of the sanitary character of the inhabitants. The population is necessarily young, the births are numerous; and the deaths among the children will consequently be proportionably numerous. Comparatively few old people exist in the town to die. This must depress the average age at death.

6. That temporary causes have operated in Lawrence, as in other new places, to depress the public health, and to produce an unnatural increase in the number of deaths. Among these causes may be mentioned;—1. The transition from one place and from one mode of living to others;—2. The bringing together of persons and adventurers of different characters and habits, sometimes with broken fortunes or debilitated constitutions;—3. The digging up and removal of the soil and earth, sometimes producing unwholesome exhalations;—4. Exposure in working in mud and water, in constructing the dam, canal, and other works;—5. The insufficiency of proper house accommodations;—And 6. The habitations, habits, and peculiar modes of

living of the Irish laborers. These and other causes have produced fevers, dysentery, scarlatina, consumption, and the other fatal diseases which have prevailed here; and have operated to produce an excess of deaths above a healthy standard. These causes will operate less extensively, however, as the population becomes more settled and stationary.

7. That there is reason to believe that the natural position of the town, its artificial and local arrangements, the social and pecuniary condition of the inhabitants, and the means provided for their welfare and improvement, will render Lawrence one of the most healthy manufacturing towns in the State, especially if all its affairs continue to be wisely and properly regulated and conducted.

And it is *recommended*—

1. That such wise and practical sanitary rules and regulations be made by the board of health, and always kept in force, as will prevent nuisances and secure cleanliness in every street and avenue, and around, near, and in every dwelling-house.

2. That every practical effort be made to prevent crowding too many houses upon one lot, and too many families or persons into one house; and whenever such a sanitary evil may be found, that it be immediately corrected.

3. That as soon as practicable, means should be provided for introducing into every dwelling-house an abundant supply of pure, soft water for domestic use.

4. That water should not be permitted to stagnate in any street or low grounds, within the populous parts of the town; and wherever such cases exist, that the locality be drained or filled up as speedily as possible.

5. That the Catholic burial grounds and other places for the interment of the dead, be placed under the control of the board of health of the town, and be subject to such regulations as they shall see fit to establish.

6. That a thorough sanitary supervision be exercised by the police or other authority over every department of the town, and, as far as practicable, that every avenue to intemperance and other vice be closed; that every violation of every sanitary regulation be immediately detected, and that nothing unfavorable to the public health be suffered to exist.

7. That exact observations be made by the manufacturing companies and in the public schools, concerning the sickness that occurs, as recommended in this Report, (pp. 171, 178, and pp. 404–407,) that the true sanitary character of the locality and of the various occupations may be fully ascertained.

8. That such of the measures suggested in this Report, as are applicable to this town, be adopted and carried into effect by the board of health and by the inhabitants.

9. That a general report be made annually, by the board of health, or by the selectmen, which shall embrace a concise abstract of the facts concerning the several public departments and offices of the town, gathered during the preceding year, exhibiting its sanitary progress and its condition; and which shall recommend such measures as may lead to improvement; and that the same be printed and distributed among the inhabitants.

XXV. Sanitary Survey of Attleborough. By the Commission.

1. *Natural and Atmospheric Condition of the Town.*

The town of Attleborough is in the county of Bristol. The railroad station, near the church in East Attleborough, is 11 miles north northeasterly from Providence, 31 south southwesterly from Boston, and about 30 in a direct line easterly from the tidewaters of Plymouth county. Wrentham bounds it on the north, Mansfield and Norton on the east, Rehoboth, Seekonk, and Pawtucket on the south, and Cumberland in Rhode Island, on the west. The latitude of the east parish church is 41° 56′ 42.55″, and the longitude 71° 17′ 16.86″ The area of the town, according to actual survey, is 45 $\frac{83}{100}$ square miles, or 29,331 square acres, equal to nearly *seven* towns of the size of Lawrence, just described.

Its horizontal surface, though somewhat diversified in some sections, is more generally level than a majority of the towns in the State. There are no very considerable elevations. Ten Mile Hill, on the north, is the highest. Its most elevated part, known as Mount Hope, is said to be the highest land in Bristol county; and is celebrated in Indian history. Red Rock Hill and Rattlesnake Hill, near the "City," and Oak Hill, near Dodgeville, are worthy of notice. The western and northwestern parts of the town are more uneven and diversified than the eastern. It may be stated, as an illustration of the horizontal surface of this section, that the railroad passes through it, 17 miles from Foxborough, south 36 degrees west, in an exactly straight line to the last crossing of the Ten Mile River, near the cove in Seekonk; and in the whole distance very little excavation or bank filling was required. At the crossing of the road leading from East Attleborough to Foxborough, east side of Bungay Swamp, it is 125 feet above high water at Providence, and 129 above that of Boston. From thence, southerly, it falls 5.86 feet per mile. At the station, near the meeting-house, it is 123 feet above high water, and the inclination is 8.97 feet per mile. The grade of the road where it crosses the river, near the Dodgeville factory, is 108.33 feet, and the lowest bed of the river 85-41 feet, above high water. The Ten Mile River, in its passage through the town, falls 132 feet.

There is some peculiarity in the geological features of Attleborough. A strata of graywacke conglomerate soil, of the red slaty variety, intersects the town from the southwesterly to the northeasterly sections, and prevails extensively near the "City." Red Rock Hill, in that neighborhood, is comprised almost entirely of this variety. The water which comes in contact with it, often becomes discolored like chocolate. It is frequently mixed with other varieties; and Professor Hitchcock supposes that "beds of limestone, enough to be worked, may be discovered." Some parts contain 94.6 per cent. of carbonate of lime; sometimes 26.8 per cent. of alumina; "and being often intermixed with red slate, it would form, when polished, a beauful marble, if masses large enough could be obtained."[1] Anthracite coal has been found in the bordering towns of Cumberland, on the west,

[1] Hitchcock's Economical Geology, pp. 68, 18, 24, 39. (House Document, 1838, No. 52.)

and Mansfield, on the east; and it is not unlikely that some strata of the same mineral exist beneath some part of the surface of this town. In some parts of the town the soil is light, gravelly, and not of great fertility; but in a considerable portion it is strong and productive.

No natural ponds exist in the town; though there are several low swamps and meadows, of greater or less extent. The most considerable is the Bungay Swamp and meadow, lying each side of Bungay River, and extending from East Attleborough, northerly, to Bungay River Reservoir, which includes a pond known as Witch Pond. The waters of Shepard's Pond, just within the adjoining town of Foxborough, sometimes flow into Bungay River, and at the same time into a branch of the Taunton River, each running in different courses. The natural declivity of the town is in a southern direction.

There are several small streams of water within the town; the largest of which is the *Ten Mile River*. Its source is in Wrentham; and it passes through Attleborough, in an irregular course, southeasterly and southerly; and flows into Providence River, at the Seekonk Cove, near Providence. Its length within this town is 13 miles; its whole length 25 miles. In an average current it discharges about 50 cubic feet of water per second. The *Seven Mile River* traverses the westerly part of the town, from north to south, and unites with the Ten Mile River, near the line of Pawtucket. Its length is about 10 miles, and it discharges about 15 cubic feet per second. The *Bungay River* rises in a pond or reservoir, in the northeasterly part of the town, near Mansfield, already mentioned; and after a journey of about five miles, in a sluggish current, falls into the Ten Mile River, near East Attleborough Village. It is an unfailing stream, at all seasons of the year, and discharges about 10 cubic feet per second. The *Abbott's Run* is a small stream, which enters the town from Cumberland; and, after a passage of a few miles, again returns to its native town, and finally enters the Blackstone, below Valley Falls.

The borders of the rivers and some other sections, in ancient times, contained many grass meadows or prairies, of considerable extent, which was one of the causes of its early settlement.

Meteorological and botanical observations, exhibiting any peculiar feature, have not as yet been made.

2. *Artificial and Local Condition of the Town.*

Attleborough was one of the early settlements of the Old Colony of Plymouth. The lands now comprised within its limits were purchased in 1661, by the adjoining town of Rehoboth, and for about thirty years afterwards were known as the *North Purchase* of that town. It was separately incorporated under its present name, in 1694. The first settlement was made in 1635, in that part of the original limits of Attleborough now comprised in Cumberland, by William Blackstone, who had lived in Boston before the arrival of Winthrop's company. John Woodcock and his sons made the first settlement within the present limits of the town, in 1669, in the neighborhood of the Baptist Meeting-house. Few peculiarly striking features have been presented during the long period of the town's history. In successive ages it has exhibited a steady, and nearly uniform, but not a rapid growth. All the territory was included in one parish until April 7, 1743, when it was divided into two; the *first*—the west or town

parish; and the *second*—the east parish. The latter has since conducted its parish affairs separately from the rest of the town.

The Boston and Providence Turnpike, opened in 1804, and the Boston and Providence Railroad, opened in 1835, pass through this town; and afford direct and easy access to the principal markets and cities of the country. The former has lost the great amount of travel it once had, since the latter was opened. Providence was the principal market before the opening of this road. Three post offices exist in the town.

The waters of the rivers at nearly all the falls have been obstructed in their courses by dams; and have been used for manufacturing purposes. Three or four grist and saw-mills were built in the early ages of the town. Several artificial ponds and reservoirs have thus been created. The large extent of territory, the location of the mill powers upon the rivers, and the genius and pursuits of industry of the inhabitants, have given rise to several considerable villages in different sections of the town, and prevented any one from becoming a common centre for the whole. This gives to the town a peculiar characteristic, differing from the great majority of the towns in the State.

The most considerable town villages are as follows:—1. "*North Attleborough*," on the turnpike, in the north part of the town. It is the location of most of the jewelry establishments; and contains the Baptist and Universalist churches, and a post office. 2. "*Attleborough Falls*," further southeasterly. The river has a fall here of 30 feet; and near by, westerly, is an artificial reservoir, containing 160 acres. At this place, a cotton mill was erected in 1809. A saw mill, grist mill, and other mechanical works, are located here. 3. "*Robinsonville*," lower down the river, the location of most of the metal button manufactories. The first establishments of the kind in the United States were commenced here in 1812. 4. "*Dean Town*," next below, the location of a cotton mill. 5. "*Farmersville*," containing the "Farmers' Factory," first erected in 1813. 6. "*Mechanicsville*," the location of the "Mechanics' Cotton Mills," erected in 1811. 7. "*East Attleborough*," or "Attleborough Depot," the station of the Boston and Providence Railroad, the location of the East Parish Church, the Attleborough Bank, a Post Office, and other objects of interest. 8. "*Dodgeville*," further south, the location of the largest cotton mill in the town, first erected in 1809. It has a capital of $80,000, and contains 4,000 spindles and 130 looms. 9. "*Hebronville*," near the south line, bounding on Seekonk, the location of a cotton mill, erected in 1812. All the foregoing villages are on the Ten Mile River, which passes ten dams in its course through the town. 10. "*West Attleborough*," the location of the First Congregational Church, a small button factory, and some other works. 11. "*Attleborough City*," southerly of Red Rock Hill, and the location of a cotton mill, erected in 1813, and a post office. These two villages are on the Seven Mile River. 12. "*Lanesville*," on the river Abbott's Run, near the Cumberland line. It has also a cotton mill, erected in 1826.

It will be perceived that the water power has been the principal cause of the location and growth of these villages. The cotton mills, though they have an important influence upon the pecuniary and social character of the town, are not very extensive; altogether they contain

14,364 spindles and 446 looms, about one-third the number in the single mill of the Atlantic Company, in Lawrence.[1]

An account of the manner in which the lands of the town have been classified, has been returned once in each ten years, since 1790, for the purposes of the decennial valuation of the property of the Commonwealth. The following abstract of these returns, will exhibit a better idea of the progressive condition of the town, than any description we might give. The quantity of land, as returned by the assessors, appears by the statement to have been 1,404 acres less in 1850 than that ascertained by actual survey, as stated, page 458. In some other years, a greater difference appears.

Acres.	In 1800.	In 1810.	In 1820.	In 1830.	In 1840.	In 1850.
Of Tillage Land, . .	1,310	1,430	1,454	1,185	1,803	1,475
Of English Mowing, .	1,780	2,175	2,341	2,504	3,036	3,541
Of Fresh Meadow, .	2,045	2,201	2,072	1,767	1,906	1,669
Of Pasturage, . . .	5,250	7,157	6,642	4,733	5,582	7,071
Of Woodland, . . .	2,761	3,195	2,240	2,288	7,947	9,197
Of Unimproved Land,	7,084	7,875	7,233	7,361	5,450	3,194
Unimprovable, . . .	3,185	Not returned this year.	1,957	4,851	60	121
Owned by the Town,	1,617		400	310	108	109
Used for Roads, . .	813		736	516	600	750
Covered with water, .	464		493	456	1,138	800
Total, ...	26,309		25,568	25,971	27,630	27,927

Different modes seem to have been adopted, at different periods, as to the class to which some lands should be assigned, especially the woodland and unimproved land. The same lands appear to have been assigned to one class at one period, and to another at a different period.

3. *Number and Condition of the Inhabitants.*

The first census known to have been taken, was in 1765, when the town contained 1,739 inhabitants. The next was taken in 1790, and gave 2,166. The next three censuses were as follows:—

	1800.			1810.			1820.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
Under 10,	365	319	684	381	316	697	394	395	789
10 to 16,	198	217	415	219	195	414	228	246	474
16 to 26,	272	297	569	250	321	571	281	326	607
26 to 45,	190	191	381	232	275	507	270	360	630
Over 45,	180	241	421	234	278	512	241	301	542
Total,	1,205	1,265	2,470	1,316	1,385	2,701	1,414	1,628	3,042
Colored Persons,	.		10	.	.	15	.	.	13
Total,		.	2,480	.	.	2,716	.	.	3,055

The last three enumerations seem to have been made with great care and accuracy. The State gave 3,635, or 40 more than the United States, in 1840; 4,157, or 43 less in 1850, which is a remarkable agreement under the circumstances. The East Parish, by the

[1] Some account of the early history of these establishments, prior to 1834, may be found in Daggett's valuable "Sketch of the History of Attleborough," pp. 121–126.

United States Census in 1850, had 1,489, and by the State Census 1,466—a difference of 23 only. South or West Attleborough, had 864, and North Attleborough 1827.

The population increased 427, or 24.5 per cent. from 1765 to 1790; 324, or 14.9 per cent. 1790 to 1800; 236, or 9.5 per cent. 1800 to 1810; 349, or 12.8 per cent. 1810 to 1820; 160, or 5.8 per cent. 1820 to 1830, (beside 12 families, containing about 50 persons, which were set off to Wrentham;) 373, or 11.2 per cent. 1830 to 1840; and 612, or 17 per cent. 1840 to 1850. This shows a remarkably uniform increase at the different periods.

In 1800 there was, on an average of the whole township, 54 persons to the square mile, or 11.8 acres to each person; in 1850 there was 91 persons to the square mile, or 7 acres nearly to each person.

We have compiled the subjoined abstract of the last three censuses, showing the number of each sex and of both sexes, at each of the different ages specified; the number under 5, in the *Infantile Period* of life; the number between 5 and 15, the *Educational Period* of life; the number between 15 and 60, the *Productive Period* of life; and the number over 60, the *Declining Period* of life; the proportion per cent. living in each of these periods; and the average age at each:—

Ages.	1830.			1840.			1850.		
	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.
Under 5, . .	199	209	408	228	209	437	224	225	449
5 to 10, . .	165	182	347	189	207	396	185	204	389
10 to 15, . .	164	186	350	199	181	380	200	178	378
15 to 20, . .	171	205	376	163	202	365	239	257	496
20 to 30, . .	234	356	590	278	365	643	419	441	860
30 to 40, . .	189	231	420	208	247	455	271	268	539
40 to 50, . .	144	151	295	175	218	393	209	212	421
50 to 60, . .	82	116	198	99	136	235	138	192	330
60 to 70, . .	70	75	145	83	84	167	96	111	207
70 to 80, . .	31	32	63	43	49	92	43	59	102
80 to 90, . .	8	15	23	8	12	20	12	9	21
Over 90, . .	.	.	.	.	2	2	3	5	8
Total, . . .	1,457	1,758	3,215	1,673	1,912	3,585	2,039	2,161	4,200
Under 5, . .	199	209	408	228	209	437	224	225	449
5 to 15, . .	329	368	697	388	388	776	385	382	767
15 to 60, . .	820	1,059	1,879	923	1,168	2,091	1,276	1,370	2,646
Over 60, . .	109	122	231	134	147	281	154	184	338
Total, . . .	1,457	1,758	3,215	1,673	1,912	3,585	2,039	2,161	4,200
Proportion, . .									
Under 5, . .	13.6	11.9	12.7	13.6	10.9	12.2	11.0	10.4	10.7
5 to 15, . .	22.6	20.9	21.7	23.2	20.3	21.7	18.9	17.7	18.3
15 to 60, . .	56.3	60.3	58.4	55.2	61.1	58.3	62.6	63.4	63.0
Over 60, . .	7.5	6.9	7.2	8.0	7.7	7.8	7.5	8.5	8.0
Total, . . .	100.	100.	100.	100.	100.	100.	100.	100.	100.
Average Age, .	25.9	26.4	26.2	26.4	27.8	26.9	27.6	28.7	28.2

This table may be read thus, taking the two lower sections of the last column. Among both sexes there were, in 1850, living in Attleborough, 449, or 10.7 per cent. of the population, under 5; 767, or 18.3 per cent. 5 to 15; 2,646, or 63 per cent. 15 to 60; and 338, or 8 per cent. who had survived 60. The average age of the whole was 28.2 years. And in like manner at other periods and among different sexes. One is living over 100 years old.

The colored population was 11, in 1830; 16 in 1840; and 16 (5 blacks and 11 mulattoes,) in 1850.

The legal voters are 796, or 1 in 5.2 of the population.

The sexes of the population will appear as follows:—

	Both Sexes.	Males.	Females.	Proportion per Cent. Males.	Females.	In 100 Males, the Females were
1800,	2,470	1,205	1,265	48.79	51.21	104.97
1810,	2,701	1,316	1,385	48.72	51.28	105.27
1820,	3,042	1,414	1,628	46.48	53.52	115.13
1830,	3,215	1,457	1,758	45.32	54.68	120.65
1840,	3,585	1,673	1,912	46.67	53.33	114.22
1850,	4,200	2,039	2,161	48.55	51.45	105.98

This statement shows that the introduction into the cotton mills of female operatives, increased the proportion of the female sex from 1810 to 1830; and since then the introduction of male operatives, who are principally employed in the jewelry establishments, has reduced the sexes to nearly their natural proportions.

The domestic or civil condition of the inhabitants, or the number of persons living unmarried, married, and widowed, has not been ascertained, though an interesting and important characteristic.

The places of birth of the inhabitants are given in the United States Census, by which it appears that 2,988, or 71.1 per cent. were born in Massachusetts; 734, or 17.5 per cent. in other States; 411, or 9.8 per cent. were foreigners; 67, or 1.6 per cent. unknown. Of those born in other States, 453 were natives of the adjoining State of Rhode Island, 65 of New York, 53 of New Hampshire, 50 of Connecticut, 48 of Maine, 30 of Vermont, 24 of Pennsylvania, 4 of New Jersey, 2 each of Ohio and Illinois, and 1 each of Michigan, South Carolina, and Georgia. Of the foreigners, 22 were born in the British Provinces of New Brunswick, Nova Scotia, and Canada, 301 in Ireland, 75 in England, 8 in Scotland, 4 in Germany, and 1 in France. No distinction was made, as it should have been, to show the sanitary influence of locality, between those who were natives of this town, and those who were natives of other parts of the State.

The house accommodation enjoyed by the inhabitants can be ascertained with considerable accuracy. In 1765, according to a census then taken, there were 266 dwelling-houses, inhabited by 301 families, and 1,739 inhabitants; or 6.5 persons to a house and 5.6 persons to a family. In 1790 the dwelling-houses were 314, and the inhabitants 2,166, or 6.9 to a house. The following is a statement of the dwelling-houses since 1800:—

Years.	Dwelling-houses.	Shops.	Manufactories.	Barns.	Other Buildings.	Total Buildings.	Persons to 1 Dwelling-house.
1800,	287	22	11	226	41	587	8.6
1810,	340	71	17	277	32	737	8.0
1820,	379	64	37	328	51	859	8.0
1830,	409	27	19	344	32	831	7.8
1840,	494	74	16	402	24	1,010	7.2
1850,	591	122	17	390	104	1,224	7.1

According to the United States Census, there were 620 dwelling-houses or tenements, in 1850, inhabited by 833 families and 4,200 persons. This is 5.8 persons to a house, and 5 to a family. The assessors, probably, in some instances, returned a double tenement as one house, which was returned in the United States Census as two houses, which accounts for the discrepancy. This statement shows that the number of persons to a dwelling-house has been gradually growing less since 1800; and that there are, on the average, one and a half persons less now, than there were fifty years ago. House accommodation has consequently greatly improved. And it has increased not only in having a less number of persons to a house, but in a better quality of houses.

The occupations of the male inhabitants, over 15 years of age, are specified in the census of 1850; from which we have compiled the following abstract:—

Farmers, (all owners or head managers, except 5,)	282
Jewellers,	359
Other mechanics and manufacturers:—4 bakers, 24 blacksmiths, 2 boat-builders, 1 bonnet maker, 24 boot and shoemakers, 4 box makers, 3 brass founders, 1 brewer, 9 button makers, 1 cabinet maker, 3 carriage and harness makers, 4 clock makers, 57 carpenters, 3 comb makers, 1 confectioner, 1 cooper, 1 hatter, 1 locksmith, 22 machinists, 11 masons, 100 manufacturers, either overseers or operatives, principally in the cotton mills; 5 millers, 1 moulder, 10 painters, 7 shuttle makers, 1 stone cutter, 3 tailors, 7 tanners, 6 tinners, 1 tallow chandler, 2 turners, 1 watchmaker, 7 wheelwrights,	328
Professional men:—7 clergymen, 1 lawyer, 6 physicians,	14
Other occupations:—1 artist, 2 almshouse keepers, 6 butchers, 1 cashier, 13 clerks, 9 gentlemen, 11 "gold hunters," temporary absentees in California; 1 dentist, 1 depot master, 1 fisherman, 4 innkeepers, 2 hostlers, 3 invalids, 1 Indian doctor, 1 Thompsonian doctor, 4 livery keepers, 17 merchants, 8 pedlers, 2 post-masters, 4 sailors, 2 publishers, 2 railroad masters, 2 stage drivers, 6 students, 2 teachers, 1 vocalist,	107
Common laborers,	256
Persons whose occupations are not specified,	84
Total male persons in the town, over 15 years of age,	1,430

The number of farmers here returned, is only 5 more than the number of farms enumerated; and probably includes the owners of the farms only, and not the sons of farmers, or the laborers engaged on the farms, and does not represent the exact number engaged in agriculture. The mechanics and manufacturers are 687, or nearly 48 per cent. of the male inhabitants over 15 years of age.

Average monthly wages to a farm hand, with board, 6 mo.,	$14 00
Average to a day laborer, with board,	0 67
Average to a day laborer, without board,	1 00
Average day wages to a carpenter, without board,	1 33
Weekly wages to a female domestic, with board,	1 50
Price of board to laboring men, per week,	2 00

The average wages for the male operatives in the cotton mills, is $5 per week, and of the females, $3.50 per week, including board, which is $2 for males, and $1.42 for females. The operatives in the jewelry establishments usually work by the piece, and earn about the average wages of other mechanics.

The inhabitants were principally occupied in agriculture for the first hundred and fifty years of the town's existence. For the last 40 years an increased attention has been paid to other occupations; and, during that period, the number of farms and the amount of agricultural productions do not seem to have greatly increased, notwithstanding the increase of population. This inference may be derived from the following statement, compiled from the returns of the assessors for the decennial valuation of the State :—

Produce.	In 1800.	In 1810.	In 1820.	In 1830.	In 1840.	In 1850.
Bushels of Indian Corn,	11,080	.	10,459	10,130	6,981	12,891
" of Rye,	1,755	.	1,988	1,499	2,565	2,438
" of Oats,	1,017	.	2,973	230	2,315	2,577
Tons of English Hay,	813	.	840	1,271	1,636	2,294
" of Meadow Hay,	1,347	.	1,089	889	1,071	1,669
Horses,	230	249	226	257	298	388
Oxen,	361	291	321	349	189	235
Cows,	859	898	914	899	692	769
Swine,	431	419	581	573	577	544

From this statement it appears that the amount of Indian corn, rye, oats, and English hay has somewhat increased. Meadow hay has decreased in the amount of production. The amount of live stock has remained about stationary.

The following interesting statement is abstracted from the returns accompanying the census of the United States for 1850. This census seems to have been taken with great care and accuracy, by Col. Willard Blackinton, of Attleborough, who was familiar with the localities and the interests of the town :—

Acres of Land.		*Live Stock, June* 1, 1850.	
Improved,	11,756	Horses,	280
Unimproved,	9,454	Milch Cows,	738
		Working Oxen,	247
	21,210	Other Cattle,	351

Sheep,	88
Swine,	653
Value of Live Stock,	$56,486

Produce during the year ending June 1, 1850.

Bushels of Wheat,	22
" of Rye,	2,898
" of Indian Corn,	14,534
" of Oats,	2,461
" of Peas & Beans,	499
" of Potatoes,	20,769
" of Barley,	93
" of Buckwheat,	86
Value of Orchard Produce,	$4,194
Value of Produce of Market Garden,	$455
Pounds of Butter,	41,485
" of Cheese,	10,130
" of Wool,	109
Tons of Hay,	3,074
Bushels of Grass Seed,	121
Pounds of Honey & Wax,	540
Value of Household Manufactures,	$1,430
Value of Animals slaughtered,	$19,172
Cash value of Farms,	$711,230
" " of Farming Tools,	$19,690
	$730,920

The number of farming establishments enumerated was 277; and they contained 21,210 acres of land, 11,756 of which was improved, and 9,454 unimproved. This is nearly *three-fourths* of the town, or 8,121 acres less than the exact area. This gives 76.5 acres,—42.5 improved and 34 unimproved—as the average size of each farm. The largest contained 400 acres—275 improved, and 125 unimproved,—and the smallest, 10 acres.

The aggregate cash value of the farms was $711,230; the average value was $2,567. One was valued at $380; 15 under $1,000; 78 from 1 to $2,000; 84 from 2 to $3,000; 51 from 3 to $4,000; 23 from 4 to $5,000; 17 from 5 to $6,000; 5 from 6 to $7,000; 2 from 8 to $9,000; 1 from 9 to $10,000; and 1 at $10,000. The whole capital invested may be stated as follows:—

Cash value of the Farms,	$711,230
" " " Farming Implements,	19,690
" " " Live Stock,	56,486
Total capital invested in Farms,	$787,406
The value of the annual productions, estimated at the market value in the town, were	$104,959

The manufacturing industry of the town affords a means of subsistence to a considerable portion of the inhabitants; and it has been directed to the production of some articles, at an earlier period and in greater quantities here, than in any other American town. We have already stated that the first manufactory of metal buttons, and the first manufactory of gold and gilt jewelry and silver ware, in the United States, were located in this town. The cotton manufacture had also an early preference. These three kinds of manufacture have been the leading articles of attention. Their productive value has varied in different years. Some years have been more prosperous than others. The manufacture of metal buttons is much less extensive now than in past years. The jewelry business is at present in the ascendancy. One of these establishments is 240 feet in length, 40 in

breadth, and two stories high, and is furnished with water and steam-power. Another is nearly as large.

The manufacturing statistics have been collected at four different periods; twice under the authority of the State, and twice under that of the United States. An abstract of each is subjoined.

Kinds of Business or Manufacture.	1837.				1845.			
	Estab-m'nts.	Capital Invested.	Operatives.	Value of Product.	Estab-m'nts.	Capital Invested.	Operatives.	Value of Product.
By the State.								
Cotton Mills,	8	$259,000	377	$229,577	8	$222,000	362	$414,757
Metallic Buttons,	1	90,000	63	90,000	1	50,000	45	41,080
Jewelry,	.	50,000	112	92,000	11	28,000	102	85,000
Hooks and Eyes,	.	.	.	.	1	3,000	30	20,222
Shuttles,	.	.	.	.	1	4,000	14	8,375
Other articles,	.	40,500	64	84,000	.	14,400	129	85,155
Total,	.	$439,500	616	$495,577	.	$321,400	682	$654,589
By the United States.	1840.				1850.			
Cotton Mills,	.	$215,000	368	$150,300	8	$250,000	377	$186,017
Metallic Buttons,	.	56,000	189	92,000	3	8,000	33	23,000
Jewelry,	.	.	.	.	19	144,500	381	478,200
Hooks and Eyes,	.	.	.	.	1	10,000	30	20,000
Shuttles,	.	.	.	.	1	2,500	20	8,000
Other articles,	.	9,000	12	20,000	11	20,150	34	41,750
Total,		$280,000	569	$262,300	43	$435,150	875	$756,967

It has been repeatedly said that the facts collected in 1840 are imperfect and unreliable, as an exhibition of the industry of the country. The above abstract affords an additional illustration of the correctness of this opinion.

The establishments for the manufacture of "other articles" specified in the table under 1850, were 1 baker, 1 boat-builder, 2 box and trunk makers, 1 brass and iron founder, 1 carriage smith, 1 clock maker, 1 paper-box maker, 1 tallow chandler, and 2 tanners. Besides these, there were also enumerated in 1845, the makers of blocks and pumps, boots and shoes, bricks, cabinet ware, carpenters' tools, combs, harnesses, straw goods, tin ware, weavers' reeds, and some other articles, a part of which are still continued.

At 18 establishments water power is used; at one, water and steam, and at the others, hand power. The cotton mills consume 1,575 bales of cotton, and produce 2,700,000 yards of printing cloths, 18 inches wide, No. 30 thread. At one of the establishments 168,000 dozen spool cotton, valued at $18,000, was made the last year.

It appears by the statement under 1850, that the amount of capital invested in the manufacturing business in this town, is $435,150.

The value of the articles produced,	$756,967
" " of the raw material used,	301,423
Leaving to pay for labor, incidental expenses, and for profit,	$455,544

A Bank with a capital of $100,000, and a Mutual Fire Insurance Company, exist in the town.

The pecuniary public burdens imposed upon the people in the form of taxes, will appear from the following statement, compiled from materials furnished us by the Town Clerk :—

Years.	Aggregate Valuation of the Property.			Number of Ratable Polls.	Amount of Taxes assessed.	Proportion on each.		
	Real.	Personal.	Total.			$100.	Poll.	Inhab't.
1845,	$661,733	$199,800	$861,533	733	$6,439 15	$0 48	$8 77	$1 65
1846,	677,550	210,850	888,400	778	7,060 42	0 52½	9 00	1 78
1847,	691,133	209,750	900,883	817	8,097 18	0 60	9 91	2 01
1848,	708,917	203,433	912,350	843	7,221 83	0 51	8 56	1 77
1849,	729,966	236,416	966,382	912	9,100 30	0 66	9 97	2 19
1850,	773,966	256,034	1,030,000	927	8,080 84	0 55⅓	8 71	1 92

The property of the town is entered on the assessors' books at two-thirds its nominal value, and the tax assessed upon a sum produced by six per cent. of this reduced valuation. This inconvenient method of assessing taxes has long been practised in this State, though it is now abandoned by many towns, and should be wholly prohibited by positive statute. The principle now adopted in Boston, Lawrence, and various other towns, which seems a just one, is to enter the property at its true and just cash value, and to assess the tax upon this and not upon any reduced valuation. It is obvious that no individual's personal tax will be affected by the adoption of this principle, when uniformly followed. Mr. Blackinton returns, as the true valuation of the town, in the United States Census, $1,400,000, differing from the assessors' valuation by $370,000.

The following is an account of the income and expenditures of the town for each year, ending April 1st, as far as we have been able to ascertain them, from the printed statements of the selectmen and treasurer :—

INCOME.

	In 1848.	In 1849.	In 1850.
From Taxes,	$5,829 09	$5,301 95	$6,745 35
State School Fund,		155 20	154 59
State Paupers,		9 94	14 82
Pedlers' Licenses,	40 00	30 00	70 00
Total,	$5,869 09	$5,497 09	$6,984 76

EXPENDITURES.

For County Tax,	$ 951 14	$1,080 84	$1,080 84
Public Schools,	2,164 82	2,265 48	2,760 91
Almshouse and Pauperism,	1,016 54	1,305 55	2,264 49
Roads and Bridges,	369 14	233 69	300 00
Services and Incidental Expenses,	1,368 45	611 53	578 52
Total,	$5,869 09	$5,497 09	$6,984 76

Since the burning of the almshouse, in 1849, large expenditures have been made for the new establishment; and some parts of the pauper expenditures in all the years, have been repaid by other towns. In addition to these taxes, $1,500 has been assessed for the repairs of roads, and expended in labor, under the direction of the surveyors of highways, at the rate of 10 cents per hour for a man, 10 cents for a yoke of oxen, 8 cents for a horse, 9 cents for a plough, and 2 cents for a cart.

The following is the population, and valuation property of the town as established by the State, at different periods:—

Period.	Population.	Polls.	Valuation.	Proportion of $1000	Polls to 1 Inhabitant.	Valuation to 1 Inhabitant.	Valuation to 1 Poll.
1800,	2,480	467	$294,990	$3 49	5.1	$119	$631
1810,	2,716	609	387,277	3 31	5.2	142	635
1820,	3,055	672	411,319	3 18	4.5	134	616
1830,	3,215	748	547,448	3 06	4.3	170	736
1840,	3,585	851	800,684	2 87	4.3	223	940
1850,	4,157	1035	1,400,000	.	4.0	336	.

When this sheet went to press, the State valuation for 1850, and the proportion of $1,000 to be assessed upon the town, had not been fixed. The following statement shows, at the periods specified, the number of towns, the aggregate population and valuation of the property of the whole State, and the average population and property, if all of the cities and towns had been equal. It also shows the relative rank of the town of Attleborough in the State and in the county, as to population and property:—

Period.	Number of Towns.	Population.		Valuation of Property.		Rank of the Town in the State.		Rank of the Town in the County.	
		Total.	Average.	Total.	Average.	Popu'n.	Prop'ty	Popu'n.	Prop'ty
1800,	281	422,845	1,504	$70,302,293	$250,186	31st	40th	6th	6th
1810,	290	472,040	1,627	97,976,511	337,851	23d	37th	5th	4th
1820,	299	523,287	1,750	153,644,267	513,860	26th	38th	4th	5th
1830,	307	610,408	1,990	208,360,407	678,991	33d	43d	4th	6th
1840,	308	737,700	2,395	299,878,329	973,630	36th	43d	6th	6th
1850,	322	973,715	3,022	Not ascertain'd Oct. 1, 1850.		43d		4th	

This interesting statement shows that Attleborough, at all the periods, has had more than an average population and wealth; and that the relative rank in 1800 was, as to population, the 31st town in the State, and as to property, the 40th; and in 1840, as to population, the 36th, and as to property, the 43d, showing that the relative wealth has increased faster than the relative population. And we suppose the result of 1850 will exhibit a still more favorable comparison.

For the purposes of public education the town is divided into 23 school districts; in 21 of which there is 1 public school in each, and in 2 there are 2 schools in each. From the returns of the school committee to the Board of Education, we gather the following facts in regard to the years specified:—

	In 1840-41.	In 1845-46	In 1849-50.
Children in the educational age,	947	890	776
Scholars at school in winter,	829	794	902
Average attendance in winter,	619	604	523
Number of teachers in winter,	22	24	19
Money raised by taxes for the schools,	$1,422	$2,001	$2,601
Average for each child between 5 and 15,	$1.50	$2.25	$3,352
School rank of the town in the county,	15th	7th	6th
School rank of the town in the State,	256th	150th	112th

The educational age, according to the law of 1849, is 5 to 15; previously it was 4 to 16. This will partially account for the discrepancy in the number returned in the different periods. The census for 1850 gives 767 between the ages 5 to 15, which is only 9 less than here returned. It also gives 897 who attended school during the year; and there were returned 127 over 20 years of age who cannot read and write. Two of these were natives of Massachusetts, and one of Rhode Island; the remainder were foreigners.

Many persons have supposed that the advantages of the public schools would be greatly increased by enlarging the districts, by a union of two or more in one, and thus extending the length of the school terms and raising the character of the schools; and also by the erection of a high school for the whole town, or of three or four high schools in different sections of the town. But the peculiar circumstances of the districts and some other causes, have prevented either of these plans from being carried into execution. From a statement of the distribution of the public money among the schools for 1850, it appears that the average number of children in each district, between the ages 5 to 15, was 32. The highest 68, and the lowest 12. The average amount of public money received by each, was $114.83. The largest received $228.26; and the smallest, $52.46. The average length of the schools is stated to have been about 3 months in summer and 3 months in winter. Some districts, however, could enjoy a school of any character scarcely half of that period, and some no school at all in winter, unless supported by private subscription or income of funds, which has often been done.

A legacy, amounting to $11,000, was left by Mr. Abiathar A. Richardson,[1] for the benefit of the 10 school districts in the East Parish, the income of which, nearly equalling the amount received from the public treasury, is annually distributed under the direction of a board of trustees. Another legacy of about $1,000 value, was given for the benefit of the 8th, or "City" district.

The following statement will show the names of the different religious societies; the date of their organization, and of the erection and the cost of their houses of worship and furniture; the sittings or accommodation they furnish; the funds belonging to the society; the salary of the clergymen; and the estimated annual expense of public worship:—

[1] Mr. Richardson died February, 1843, aged 29. On his gravestone is inscribed, "His legacy to Common Schools is his best epitaph and his most enduring monument."

Names.	Date of Organization.	Houses of Worship and Cost of Construction.			Funds.	Salary of Clergy'n.	Total Annual Expense.
		When Built.	Sittings.	Cost.			
1st Congregat'al,	Mar. 25, 1707	1828	500	$5,500	$5,600	$600	$800
2nd "	Apr. 7, 1743	1825	600	7,000	5,000	700	900
Baptist, . . .	Jan. 20, 1747	1817	500	5,500	2,500	600	750
Universalist, . .	Aug. 17, 1816	1818	375	4,500	.	600	800
Independent, . .	Dec. , 1827	1827	300	600	.	300	100
Total, . . .	.	.	2,275	$23,100	$13,100	$2,800	$3,350

Public worship, according to the Episcopalian forms, conducted by occasional assistance, is also held weekly at Dodgeville, though the worshippers have no house erected specially for their accommodation, nor a settled minister. A Sabbath evening service is also held at Attleborough Falls, by several clergymen, alternately, in rotation. It is estimated that about $3,500, or a little less than $1 for each inhabitant, is voluntarily contributed annually for the support of religious worship. Sabbath schools are connected with the leading religious societies, and have libraries numbering about 500 volumes. The two connected with the Congregational Societies, in January, 1850, had 425 scholars. The communicants in these churches were 377, or 1 in about 11 of the population, of whom 106 were males and 271 were females. The Baptist Church in 1849 had 145 communicants.

We compile from the returns to the Secretary of State, the following comparative statement respecting the pauperism of the town :—

	In 1840.	In 1845.	In 1849.
Value of Almshouse establishment, .	$2,500	$2,000	$4,000
Whole number relieved as paupers, .	64	31	60
Whole number in the Almshouse, .	36	20	23
Average number in the Almshouse, .	25	13	10
Insane and idiotic paupers, . .	2	5	4
Paupers made so by intemperance, .	32	10	40
Average weekly cost of each, . .	$0 90	$1 09	$1 50
Average cost out of Almshouse, .	0 25	0 78	0 80
Total annual cost, . . .	$1,500	$890	$1,000

The United States Census for 1850, returns 24 paupers, of whom 18 were Americans, and 6 foreigners; and the annual cost of their support was $840. The number of paupers has been, on the average, about 1 to 350 inhabitants; and their annual cost about 25 cents for each inhabitant.

During the year ending July 1, 1850, it appears that 28 convictions for crime have taken place; 5 for assault and battery; 1 for simple assault; 2 for larceny; 1 for shop-breaking in the day-time, (non-resident;) 1 for arson in the night-time; 7 for drunkenness; 4 for selling intoxicating drinks; and 7 for a nuisance in a highway, or throwing a "wheel-ball" or foot-ball, by which the property and lives of travellers was endangered, and actual injury inflicted. During this period, 2 new schoolhouses, 6 barns, and 1 dwelling-house were burnt by incendiaries.

In two or three places intoxicating liquors *may* be obtained, though no licenses for their sale are granted. The number of intemperate persons has greatly lessened within the last twenty or thirty years.

4. *Municipal Affairs and Sanitary Police.*

The government of the town consists of 3 selectmen, a town clerk, a treasurer, a collector, 7 school committee-men, 4 constables, 26 surveyors of highways, 4 fence viewers, 8 field drivers, 4 surveyors of lumber, 4 surveyors of bark, 1 sealer of weights and measures, all chosen in April, annually. The selectmen generally act as assessors and overseers of the poor, though separate boards for these objects are sometimes chosen.

The town police consists of the 4 constables, and a deputy sheriff and a coroner, who reside here. Civil and criminal causes are now brought before the Trial Justice of the town. There is no systematic organization for the extinguishment of fires. There are a few small engines, which are managed by temporary volunteers.

No separate Board of Health has existed; nor have any health regulations been published. The small-pox has occasionally appeared; and at such times the selectmen, when they have deemed it expedient, have provided accommodations for the sick. Arrangements have sometimes been made for the people to assemble in the several district schoolhouses to be vaccinated. It has not, however, been very systematically done. In no other cases have the selectmen acted as a Board of Health.

There are several places for the interment of the dead. 1. The "Woodcock Burying Ground," near the Baptist meeting-house, in North Attleborough, is the most ancient ground in town, and was given for this purpose by John Woodcock. His son, Nathaniel, was the first person buried here. He was killed by the Indians, in 1676, and was interred beneath the spot where he fell. This ground contains about one acre, is filled with graves, has ceased to be a place of interment, and is now in a neglected condition. 2. The "Union" Ground, near the Universalist church, contains about two acres, and has several tombs. 3. The "Falls" Ground contains about two acres, and is completely filled. 4. The "City" Ground, in South Attleborough, contains four acres, and has recently been enlarged and beautified. 5. The "East Attleborough" Ground was established in 1744, contains two acres, and is nearly filled. In 1834 the railroad was laid out through this ground, and the remains in many of the graves were removed, which produced great excitement and opposition. 6. The "Hebronville" Ground contains two acres. Besides these, there are several "neighborhood" grounds, where a few bodies are interred; and also a few "family" or private grounds, on separate estates.

"Mount Hope Cemetery" was established in 1850, by a joint stock company, organized under the general laws of the Commonwealth. It is located near Attleborough Falls, and contains eight acres, partly cleared lands and partly woodland groves. It is laid out into family lots and single graves, accessible by avenues and paths. The amount already expended is about $1,200. The first interment in this ground took place August, 1850. Family lots, containing from 300 to 900 square feet, are sold for 3 cents per foot. The following are the printed regulations established by the trustees:—

1. The trustees shall consist of five persons. 2. A sexton or superintendent shall be appointed by the trustees, who shall have charge of the grounds, and shall be under their orders and responsible to them. He shall keep a record of all interments, including the name of the deceased, place of birth, age, names of parents, date and cause of death, in a book, in such form and manner as the trustees shall prescribe. 3. Said trustees shall also appoint a register, who shall make a fair and plain record or copy of the facts contained in the sexton's book, to be preserved in a permanent form. 4. Suitable boundary stones or monuments shall be set up and kept at the corners of each lot. 5. No person shall cut down any tree now standing on his lot, without the consent of the trustees. 6. No owner shall raise or lower the general surface of his lot more than six inches, without the consent of the trustees. 7. It shall be the duty of the sexton to prevent all injuries by visiters or others, to the trees, shrubbery or flowers growing on the grounds; and all gunning on the premises shall be entirely prohibited. And the trustees may prescribe such rules and regulations for visiters, not inconsistent with these by-laws, as they may deem best. 8. A book shall be kept by the register, in which the titles to the lots purchased shall be recorded. 9. Rights to a single grave may be obtained by permits of the trustees, at the rate of two dollars for an adult, and one dollar for children, in the ground which has been appropriated for the purpose; and permits may be granted by them for single burials, without charge, to such persons as are unable to pay. 10. The sexton's charge for opening, closing and sodding a grave, and his attendance at the interment, shall be two dollars.

The undertaker or sexton for East Attleborough, is chosen by the parish; for the other grounds, by the proprietors, though they are not regularly appointed, and none of them are responsible, as they should be, to the selectmen or town clerk. The customary mode of interment is as follows:—The family of the deceased selects some person to act as "superintendent," to see that all the proceedings at the funeral are conducted in an orderly and becoming manner. The undertaker digs and closes the grave. Some one volunteers, or is invited to manage the hearse, without charge; and receives the body at the house and deposits it at the place of interment, in presence of the mourners. The ordinary expenses are—for coffin, $6; undertaker's fees, $2; total, $8.

5. *Health, Sickness, and Mortality of the Inhabitants.*

The records of births, marriages, and deaths commenced May 1, 1843, under the laws of the State. Previously, records of this kind were made in family groups, to each of which a part of a page of the record book was assigned. They, however, comprized a very small part only of the whole number of these events.

The *Births*, from 1843 to 1845, were imperfectly recorded. In 1846 and 1847, they were more generally entered, and for the last two years, it is believed that few, if any, have been omitted. The entries for the four years, 1846–1849, have been 488,—an annual average of 122, or 3.31 per cent., or 1 in 31.9, of the inhabitants. There were 148, in 1848; and 156, in 1849; or, for these two years, 1 in 27 of the inhabitants; which is probably more nearly the average proportion. Of the births, 257, or 52.66 per cent., were males, and 231, or 47.34 per cent., were females. For every 100 males born, there were 89 females.

Dr. Thaddeus Phelps, an intelligent physician of Attleborough, whose interest in sanitary matters is highly commended, has furnished us with the statistics of 600 cases of child-birth, which he has attended professionally, from which we derive the following interesting facts. They show, in a very forcible light, the physical circumstances of infant development in this town, and the sanitary condition of human life at its first production.

Of the 600 children born, 305 were males and 295 females; or 96 females for every 100 males; and in this number were 7 pairs of

twins—4 pairs in which both were girls, 2 in which both were boys, and in 1 case, one of each sex. The twin children were 2.33 per cent. of the whole.

The average weight of the boys was 8 lbs. $7\frac{15}{43}$ oz.; of the girls, 8 lbs. $6\frac{14}{43}$ oz.; and of both sexes, 8 lbs. $6\frac{38}{43}$ oz.; showing a difference of 1 oz. only between the two sexes. The largest child weighed $13\frac{1}{2}$ lbs.; the smallest that lived, (premature,) $3\frac{1}{4}$ lbs.; the smallest that breathed, after birth, 12 oz. The average weight of the twins, per pair, was 11 lbs. 9 oz. The length of the children, though a desirable fact, was not ascertained. This shows a more healthy state of infant development by about $1\frac{1}{4}$ lb., than in Belgium. (See pp. 237–8.)

Of the mothers, 36 were between 15 and 20 years of age; 338 were between 20 and 30; 179 between 30 and 40; and 47 between 40 and 47. One mother had 6 boys in succession, and 2 had 9; one had 7 girls in succession, and 1 had 8. In 2 cases there was an interval of 7 years between the children; in 4, 8 years; in 2, 9 years; in 2, 10 years; in 1, $10\frac{3}{4}$ years; and in 1, $16\frac{1}{4}$ years. 137 were the first children; 119, the 2d; 94, the 3d; 72, the 4th; 50, the 5th; 34, the 6th; 24, the 7th; 32, the 8th; 19, the 9th; 12, the 10th; 4, the 11th; 2, the 12th; and 1 was the 14th.

Of the fathers of the children, the occupations of 500 were as follows:—172 jewellers, 92 farmers, 50 button makers, 42 operatives in cotton manufactories, 32 common laborers, 13 manufacturers, 12 carpenters, 11 pedlers, 10 machinists, 10 shoemakers, 9 blacksmiths, 7 painters, 6 clergymen, 6 merchants, 4 physicians, 4 cabinet makers, 4 tailors, 3 clock makers, 3 tanners, 2 watch makers, 2 teachers, 2 bakers, 1 printer, 1 gilder, 1 innholder, and 1 dancing master. 578 were American, 14 Irish, and 8 English.

148 births occurred in the winter months, 175 in the spring, 144 in the summer, and 133 in the autumn. In 13 cases the child was born in less than 9 months after the marriage. 6, or 1 per cent. were illegitimate. 1 was a monster; 1 had a hare lip; 2 had extra fingers, and 2 extra toes; and 3 had middle fingers growing together.

Large families of children have not been uncommon. Rev. Habijah Weld, a minister of the town, who died May 14, 1782, in his 80th year, had *fifteen children;* 4 of whom died young; 10 were married during his life, and 1 after his death. He educated this large family, in a superior manner, on a salary of *two hundred and fifty dollars*, besides entertaining "much company, in a style of genuine hospitality, and was always prepared to contribute to the necessities of others!" He and his family lived according to a fixed system of rules. For 55 years he was not detained from his pulpit, nor from any of his pastoral duties, by disease. On the day of his death he rode to Providence, returned at 4 o'clock, P. M., "told his wife he was unwell, requested her to open a window as he found a difficulty in breathing, sat down, and instantly expired."[1]

The *Marriages* recorded for the six years, from January 1, 1844, to December 31, 1849, have been 138, or an annual average of 23, or about one in 175 of the inhabitants. The largest number in one year was 35, in 1844; the smallest number was 11, in 1847. In 69 of these

[1] Dwight's Travels in New England, vol. ii, p. 24.

marriages, both parties were residents of the town; in 10 the male was a resident and the female was not; in 46 the female was a resident and the male was not; and in 13 neither party was a resident. Of the 138 men, 16 had been married before, and 122 had not; and 7 of the women had been married before, and 131 had not. The ages at marriage of 90 of each sex, are recorded; and the average age of the males was 28.9, and of the females 24.4. The youngest male married was 18 years old, the youngest female 16 years old. The oldest man married was 73 years, and the oldest woman 67 years. It is presumed that this record does not contain all the marriages, though Col. Blackinton returned only 38 persons married in the year ending June 1, 1850. This is 19 marriages, or less than the above average. Many have gone elsewhere to be married, and others have come into the town from other places. Some of these escaped the record. We are pleased to learn that the importance of this record to the parties themselves and to the public, is becoming more and more appreciated. When properly understood, there will be as much desire to have such a record made, as that of the title deeds to real estate.

The *Deaths*, since May 1, 1842, principally by the praiseworthy exertions of Dr. Phelps, have nearly all been recorded. A few discrepancies exist between the entries on the town books and the returns to the Secretary of State, which we have endeavored to correct; and it is believed that these returns contain data sufficiently exact for determining the rate of mortality prevailing in the town. The important results which they have enabled us to obtain, will be presented further on. Previous to 1842 few authentic facts to illustrate the sanitary history of the inhabitants are preserved. Tradition, however, supplies a few items of useful information.

The great epidemic of the winter of 1815–16, already referred to in this Report, (pages 78 and 418,) was one of the most fatal and alarming that ever occurred, and was particularly destructive in this town. It was sometimes popularly called the *cold plague*. From physicians it received various names, but it was probably a species of typhus fever, of a peculiarly malignant type. It commenced in November, and ceased in the following April. It did not seem to be confined to one locality, but prevailed in nearly all parts of the town, and committed its ravages apparently without discrimination among both sexes, and among the respectable, the industrious, the temperate and the athletic, as well as those of a different character. In the short period of four or five months, about 100 persons became its victims, a large portion of whom were heads of families, many of the most useful and valuable citizens, and some of the officers of the church and of the town. "More than thirty died in the East Parish, eight of whom were members of the church; five died in one family." Often its attacks were sudden, its progress rapid, and its termination fatal, generally performing its whole work in from three to seven days, and baffling the most eminent medical skill. An old person seldom survived an attack. It excited great alarm, and it was difficult to procure assistance to pay proper attention to the sick or the dead. No satisfactory causes were ever assigned for its appearance. It was unquestionably atmospheric in its origin; but no exact observations concerning the peculiar circumstances of the seasons or the localities were recorded.

to guide the investigator. It was not contagious, in the common meaning of the term. Some nurses took the disease, but generally they were no more affected than others. In some localities and under some circumstances, the causes of the epidemic seemed to be attracted and concentrated with more intensity than in others; and if a person, in a condition to receive the disease, remained in such a place, he was likely to be affected. In this respect it was not unlike many other epidemics.

We are informed by Dr. Phineas Savery, of East Attleborough, that during his twenty years' residence in the town, an epidemic has occasionally occurred in some village, neighborhood, street, or other locality, while other parts of the town were healthy.

In 1832 a typhus fever appeared at Attleborough Falls, in the two houses, at the right of the road as it enters the main street from the east. In the rear of these houses is a tract of low land, frequently covered with water and heavy water vegetation. At this time the water had been drawn off, and the peculiar exhalations which arose were supposed to have been the cause of the disease. The number of persons in the houses at that time was about 75, of whom 50 were adults, employed in the cotton mills in the neighborhood. Of this number 15 were sick, and 1 died;—10 of them lodged on the side of the house next to the pond. The other houses in the vicinity were healthy. In the summer and autumn of 1839, an epidemic of a typhoid character, sometimes accompanied with pneumonia, occurred on the road leading from Wrentham to East Attleborough. It commenced near the northern line of the town, and extended southerly about three miles, to within a mile of East Attleborough, and northerly into Wrentham, and was confined entirely to the road. The first family attacked consisted of 9 persons,—father, mother, and 7 children, 8 of whom had the fever and 1 died; and of 20 families scarcely one escaped being affected. Few cases, however, terminated fatally. The other parts of the town were then healthy. A fever of the same character, but more malignant, appeared in Dodgeville, in July, 1840, and continued until the next November. In 30 cases there were 4 deaths. It was confined to the village. A similar disease has not since appeared in that place.

In the 8 years, from May 1, 1842, to May 1, 1850, to which our attention has been particularly directed, the number of deaths, according to the returns to the Secretary of State, was 604, or an annual average of 75.5, or 1.91 per cent., or 1 in 51 of the inhabitants. By deducting this from the number of births, we find an excess every year to be added to the number of the inhabitants, or to supply the large stream of emigration which has ever flowed from this town, to increase and improve the populations of other parts of the United States and of the world. This excess has averaged, for the last 4 years, 47, or 1.19 per cent. annually. For the last two years the births have been about double the number of deaths. The following statement gives the number, aggregate, and average age in each period:—

Periods.	Number.	Aggregate Ages.			Average Ages.		
May 1, 1842, to May 1, 1843,	54	1,058 ys.	5 ms.	18 ds.	19 ys.	7 ms.	6 ds.
May 1, 1843, to May 1, 1844,	93	3,467	1	11	37	3	11
May 1, 1844, to May 1, 1845,	67	2,553	4	6	38	1	3
May 1, 1845, to May 1, 1846,	75	3,289	7	5	43	10	10

Periods.	Number.	Aggregate Ages.			Average Ages.		
May 1, 1846, to May 1, 1847,	80	2,553 ys.	0 ms.	25 ds.	31 ys.	10 ms.	28 ds.
May 1, 1847, to May 1, 1848,	79	3,214	9	3	40	8	9
May 1, 1848, to Dec. 31, 1848,	63	1,556	2	10	24	8	14
1849, the whole year, . . .	78	3,103	6	12	39	9	15
Jan. 1, 1850, to May 1, 1850,	15	589	0	0	39	3	6
Total 8 years, ...	604	21,385	1	0	35	4	26

It will be perceived by this statement, that 19 years was the lowest, and 43 the highest average age, in any one year.

The undertaker of the East Attleborough Parish has kept a record of his interments since 1814; and he has stated the ages of the deceased since 1830. The diseases and some of the particulars which ought to have been stated, are omitted. From this record we compile the following statement, showing the number of interments, and the aggregate and average ages, in each year:—

Years.	Number.	Ag. Ages.	Av. Ages.	Years.	Number.	Ag. Ages.	Av. Ages.
1830,	11	405	36.8	1840,	19	575	30.2
1831,	7	394	56.3	1841,	24	778	32.4
1832,	21	635	30.2	1842,	29	487	16.7
1833,	21	315	15.0	1843,	20	598	29.9
1834,	25	700	28.0	1844,	31	1,008	32.5
1835,	23	871	37.8	1845,	27	1,083	40.1
1836,	24	440	18.3	1846,	32	851	26.5
1837,	15	488	32.5	1847,	17	514	30.2
1838,	10	206	20.6	1848,	32	959	29.9
1839,	22	824	37.4	1849,	6	309	51.5
Total,	179	5,278	29.4	Total,	237	7,162	30.2

So far as this is a characteristic of the sanitary condition of this parish, it shows that the deaths were at an average age of 5 years less than the average for the whole town. The following statement will show the number and proportion of the deaths at the four great periods of life, in the whole town for the 8 years, and in East Attleborough alone, at two periods in the last 20 years:—

Ages.	Whole Town.		East Attleborough, 1830-39.		East Attleborough, 1840-49.	
	Number.	Proportion.	Number.	Proportion.	Number.	Proportion.
Under 5,	177	29.30	69	38.55	73	30.80
5 to 15,	39	6.46	14	7.82	20	8.44
15 to 60,	201	32.28	53	29.61	95	40.08
Over 60,	187	30.96	43	24.02	49	20.68
	604	100.	179	100.	237	100.

From March 27, 1837, to December 29, 1840, 10 persons died in the almshouse, whose average ages were 68.8.

Great longevity is often attained. A record of a few instances has been preserved. Mrs. Mary Freeman died March 4, 1762, aged about 100. Mrs. Sarah Claflin, September 7, 1777, aged 100½. Samuel Robinson was very near 100 at his death. Zephaniah Robinson "very

advanced." Dea. Elkanah Wilmarth died in 1828, aged 99 years, 7 months.

John Shepard, a native of the adjoining town of Foxborough, died here in 1809, aged *one hundred and five years.* Until within a few days of his death, he was able to walk, and retained unimpaired all the faculties of his body and mind, excepting his eye sight. This he was suddenly deprived of in the night, and was not himself aware of it until the next morning, when he sought in vain for the light of day. "He was of pious character, cheerful in disposition, jocose, witty, and of a quick understanding." Two of his daughters lived over 80 years. Mrs. Mary Mann, of Wrentham, another daughter, died in 1828, aged 97. She abstained wholly from animal food, never drank tea or coffee, milk being her most common food. "She adhered to the same fashion in dress for 80 years."[1]

In the last eight years, 13 persons, or 2.1 per cent., or 1 in 46, survived 90 years, of whom 4 survived 95, and 1 survived 100. Since that period closed, in July of this year, another centenarian has died.

The influence of the seasons of the year upon the number of deaths, has not been particularly investigated, though important.

The *diseases* and *causes of death* of these 604 persons, during the 8 years, will appear from the following statement:—

Abscess,	1	Gout,	2
Accidental,	14	Gravel,	1
Apoplexy,	4	Heart, Disease of,	10
Atrophy,	13	Hernia,	1
Bladder, Disease of,	1	Hemorrhage,	3
Bowels, " "	16	Hooping Cough,	7
Brain, " "	17	Hydrophobia,	1
Bones, " "	1	Infantile Diseases,	30
Burns,	5	Insanity,	2
Cancer,	4	Intemperance,	7
Canker,	2	Jaundice,	1
Child-birth,	6	Kidney, Disease of,	1
Cholera Infantum,	3	Liver, " "	1
Cholera Morbus,	2	Malformation,	3
Consumption,	123	Mortification,	4
Convulsions,	13	Old Age,	69
Croup,	4	Paralysis,	7
Diarrhœa,	1	Pneumonia,	27
Diabetes,	1	Scarlatina,	26
Dropsy,	13	Scrofula,	2
Drowned,	4	Stomach,	1
Dysentery,	68	Sudden,	4
Dyspepsia,	2	Suicide,	2
Enteritis,	8	Tumor,	2
Erysipelas,	3	Unknown,	3
Fever, Typhus,	28		
Frozen,	1	Total,	604
Generative Org., Disease of,	1		

[1] Daggett's History, p. 120.

The diseases and causes of death, classified as recommended page 393, will appear as follows:—

Zymotic Diseases,	142
Diseases of Uncertain Seat,	81
Diseases of the Nervous Organs,	43
Diseases of the Organs of Circulation,	10
Diseases of the Respiratory Organs,	150
Diseases of the Digestive Organs,	32
Diseases of the Urinative Organs,	4
Diseases of the Generative Organs,	7
Diseases of the Locomotive Organs,	1
Old Age,	69
External Causes,	34
Unknown Causes,	31
Total,	604

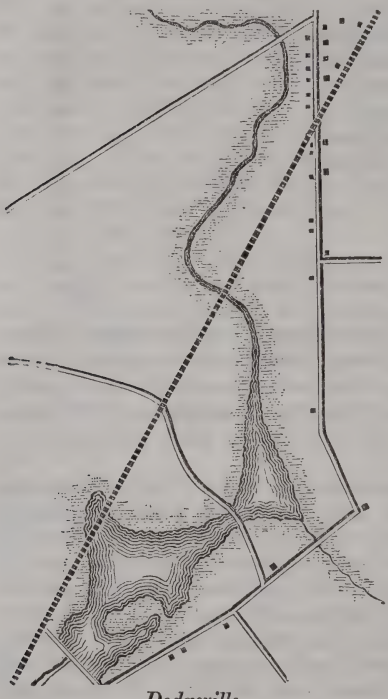
A more particular analysis of this statement may be useful. It appears that the zymotic,—or epidemic, endemic, and contagious diseases,—one of the great tests of the sanitary condition of a place, have produced about *one quarter* of the whole mortality. 142 deaths are returned; but this number does not include some which properly belong to the class.

Typhus, or typhoid fever, has produced 28 deaths. And it is remarkable that 26 of these cases were between May 1, 1842, and May 1, 1847. In the last three years two cases only have occurred. Of the 26 cases of *scarlatina*, 23 were between May 1, 1843, and May 1, 1847. It has occasionally appeared in an epidemic form in a particular locality. *Dysentery* has been the most destructive of the zymotic diseases, and has caused 68 deaths; and perhaps some other kindred diseases, here stated under the undefined diseases of the bowels and under infantile diseases, should have been included. It has caused about *one-eighth* of the whole mortality. It has occurred in every year, but was most fatal in 1842 and 1848; in the former year producing 10, and in the latter 22 deaths.

In 1842 it was epidemic in a particular locality, and under such circumstances as deserve to be particularly noticed. That definite ideas may be formed, we have figured the locality in the accompanying illustration. It lies immediately southerly of East Attleborough, and between it and Dodgeville, crossed by the railroad. The Ten Mile River passes through this section, and at the lower part forms the pond of the Dodgeville factory. The lands bordering on the river and pond are generally, especially in wet seasons, covered with water; sometimes, however, parts of them have a heavy burden of vegetable productions. At the period when the epidemic spoken of appeared, the water had been drained off or was very low; and a considerable surface of ground before covered, and the decaying vegetable matter, were thus exposed to the action of the sun and the heated atmosphere of July. The prevailing winds at the time were southwesterly; and the exhalations from the pond were carried in the direction towards the street, on its easterly side, and to the houses (indicated by the dots

on the cut) in which the disease appeared. This was supposed to have been the cause of the epidemic. The first case occurred on the 3d July, and resulted in recovery. Immediately after, others occurred in the neighboring houses, which terminated fatally; and cases continued to occur for several weeks. The disease seemed peculiarly malignant and rapid; and medical remedies produced little or no effect. The whole population of the infected district was about 120, of whom 35 were sick and 10 died. Almost every person was more or less affected. Few cases occurred without the district.

East Attleborough.



Dodgeville.

Consumption, it will be perceived, is the leading disease in this as in most other places; and has produced 123 deaths. Including pneumonia, or inflammation of the lungs, and lung fever, it occasions *one-quarter* of the whole mortality. The largest number by consumption, in one year, was 23, in 1846–7; the smallest, 10, in 1842–3; the average number, 15.

One man, a native of Smithfield, R. I., died on the 26th May, 1849, of hydrophobia. A man died June 10, 1845, from enlargement of the stomach. It was of sufficient size to contain 12 quarts. It is remarkable that 69, or about *one-eighth* of the whole, died of old age.

Two events have occurred, which have largely increased the number of deaths from external causes. On the 3d June, 1847, the almshouse was burnt, and 5 of the male inmates perished. 1 aged 85; 1 aged 69, blind; 1 aged 65, insane; and 2 boys, aged 8. On the 28th March, 1848, an explosion of a steam boiler at the Home Print Works, a concern now extinct, destroyed 7 lives,—5 males and 2 females, under peculiarly distressing circumstances.

Having expressed to Dr. Phelps a desire to obtain some information concerning the prevalence and the *Laws of Sickness* in this town, he has communicated the subjoined observations, made at our request, conformably to the forms and suggestions given on page 405 of this Report. They relate to two classes of occupations. One, concerning 15 families of farmers, all of whom had resided ten or more years in their present location, principally in the neighborhood of Attleborough Falls. The other, concerning 15 families residing in the same village, principally employed in the cotton mills; and 25 families residing in North Attleborough, principally jewellers. From these observations

we have constructed the following important table, showing the various relations of sickness :[1]—

Classes of Persons.	Number observed, of			Among whom, occurred			Annual attacks in each 100 persons.	Average Number of Days of Sickness.			Annual deaths to each 100.	
	Persons.	Days.	Years.	Attacks of Sickness.	Days of Sickness	Deaths.		To each Person.	To each Attack.	To each Death.	Living.	Sick.
Farmers.												
Males.												
Under 15,	30	10,399	28.4	5	189	-	17.8	6.6	37.8	-	-	-
15 to 60,	78	27,182	74.4	9	83	-	12.1	1.1	9.2	-	-	-
Over 60,	31	10,672	29.2	2	4	1	6.9	.01	2.0	4	3.4	50
Total,	139	48,253	132.2	16	276	1	12.1	2.1	17.2	276	.75	6.2
Females.												
Under 15,	73	25,541	69.9	8	307	1	11.5	4.4	38.7	307	1.4	12.5
15 to 60,	95	32,651	89.4	10	776	1	11.2	8.7	77.6	776	1.1	10.0
Over 60,	33	10,389	28.5	10	242	2	35.0	8.8	24.2	121	7.0	20.0
Total,	201	68,581	187.8	28	1325	4	14.8	7.0	47.3	331	2.1	14.2
Mech'ics.												
Males.												
Under 15,	133	44,873	122.9	16	272	1	13.0	2.2	17.0	272	.81	6.2
15 to 60,	220	76,896	210.6	16	420	-	7.6	2.0	26.2	-	-	-
Over 60,	19	6,475	17.7	1	320	1	5.6	18.0	320.0	320	5.6	100.0
Total,	372	128,244	351.2	33	1012	2	9.3	2.8	30.6	506	5.6	6.0
Females.												
Under 15,	203	71,234	195.1	18	126	3	9.2	6.4	7.0	41	1.5	16.6
15 to 60,	340	116,648	319.5	30	1505	1	10.1	51.0	50.1	1505	3.4	3.3
Over 60,	24	8,300	22.7	2	36	2	8.8	1.1	18.0	18	8.8	100.0
Total,	567	196,182	537.3	50	1667	6	9.7	3.2	33.3	277	1.1	12.0
Farmers,	340	116,834	320.0	44	1601	5	13.7	5.0	36.4	320	1.56	11.3
Mechanics	939	324,426	888.8	83	2679	8	9.3	3.0	32.2	393	.90	9.6
Both,	1279	441,260	1208.9	127	4280	13	10.5	3.5	33.7	329	1.07	10.2

The 1st column represents the classes of persons, as to occupations, sexes and ages, among whom the observations were made. The 2d, the actual number of each class observed. The 3d, the days observed, which is obtained by adding the products of the number of persons multiplied by the number of days in each period. This is 365 days in all the periods, except 1850, which contains but 9 months, or 273 days. The 4th, the years observed, which is obtained by dividing the total number of days observed by 365; and this is the number of years of life which the whole lived, or *the number of persons observed, supposing all to have lived one year only.* The 5th, the actual number of different attacks of sickness observed among this number of persons. The 6th, the number of days of sickness suffered. The 7th, the deaths

[1] The original observations of Dr. Phelps afford a very useful illustration of the plan we have recommended; and, for this purpose, they are given below. It will be perceived that the column relating to the "number of days observed," was omitted. It is filled by calcula-

that occurred. The remaining columns are calculated from the preceding. The 8th represents the annual attacks of sickness per cent.,

tions from the other facts, and may or may not be inserted without affecting the intrinsic value of the observations.

Observations concerning the amount of sickness suffered in 40 families, 25 of whose occupations were Jewellers, and 15 Operatives in a Cotton Factory.

Period.	Sex.	Age.	Number of persons observed.	Number of attacks.	Days of sickness.	Deaths.	Remarks.
1846.	MALES.	Under 15,	23	1	21	1	1 scarlet fever, proved fatal in 21 days.
		15 to 60,	39	1	18	-	1 jaundice, 18 days.
		Over 60,	3	-	-	-	
	FEMALES.	Under 15,	36	2	21	1	2 scarlet fever, one proved fatal in 10 days.
		15 to 60,	52	5	210	-	1 scarlet fever, 28 days; 1 bronchitis, 21; 2 lung fever, 63 and 7; typhus fever, 91.
		Over 60,	4	-	-	-	
1847.	MALES.	Under 15,	24	3	42	-	Dysentery, 14 ds.; lung fever, 14; sore throat, 14.
		15 to 60,	46	5	115	-	1 inflammatory rheumatism, 90 ds.; 1 lung fever, 2 fevers, 1 dysentery.
		Over 60,	3	-	-	-	
	FEMALES.	Under 15,	37	-	-	-	
		15 to 60,	58	6	430	-	3 fevers, 70 days; lung fever, 60; spine complaint, 240; falling of the womb, 60.
		Over 60,	4	-	-	-	
1848.	MALES.	Under 15,	34	5	105	-	Diseased ankle, 60 days; 1 measles, 7; 2 lung fevers, 17; injured arm, 21.
		15 to 60,	48	3	65	-	1 measles, 14 ds.; fever, 21; liver complaint, 30.
		Over 60,	3	-	-	-	
	FEMALES.	Under 15,	42	9	61	1	Inflammation of bowels, fatal in 4 days; 2 dysentery, 18; 2 croup, 4; 3 lung fever, 21; inflamed throat, 14.
		15 to 60,	64	6	299	1	2 dysentery, 49 days; measles, 28; inflammation of throat, 21; dyspepsia, &c., 180; 1 death consequent upon pregnancy, died in 21 days after delivery.
		Over 60,	5	-	-	-	
1849.	MALES.	Under 15,	34	3	25	-	2 mild lung fevers; 1 teething.
		15 to 60,	50	2	49	-	1 mild fever, 7 days; 1 inflammatory rheumatism, 42.
		Over 60,	5	1	320	1	1 consumption, 320 days.
	FEMALES.	Under 15,	47	6	36	1	1 fit, died in 1 day; fever, 7; teething, 7; 3 lung fevers, 21.
		15 to 60,	85	4	146	-	3 lung fevers, 60, 14 and 30 days; dysentery, 42.
		Over 60,	6	1	15	1	1 dysentery, fatal in 15 days; patient 87 yrs. old.
1850—9 mos.	MALES.	Under 15,	41	5	100	1	1 fatal case croup, died in 2 days; 3 dysentery; 1 lung fever.
		15 to 60,	37	5	173	-	2 typhoid fever, 64 ds.; 1 inflammation of lungs, with raising blood, 60; inflammation of bladder, 28; inflammatory rheumatism, 21.
		Over 60,	5	-	-	-	
	FEMALES.	Under 15,	48	1	8	-	Lung fever.
		15 to 60,	81	9	420	-	1 consumption, 147 days; 2 lung fever, 90; 2 lung complaints, 141; 3 fevers, 35; mumps, 7.
		Over 60,	5	1	21	1	Inflamed bowels consequent upon hernia.

or the number of attacks suffered by each 100 persons of the class. It is obtained by multiplying the number attacked by 100 and dividing the product by the number of years or persons. The 9th, the number of days of sickness which each person, on the average, will suffer, and is obtained by dividing the number of days of sickness by the number of years or persons. The 10th, the average duration of each attack.

Observations concerning the amount of sickness suffered in 15 families, whose occupations were Farmers.

Period.	Sex.	Age.	Number of persons observed.	Number of attacks.	Days of sickness.	Deaths.	Remarks.
1846.	MALES.	Under 15,	5	1	140	-	Hip disease.
		15 to 60,	16	1	3	-	Cholera morbus.
		Over 60,	4	1	4	-	Fever.
	FEMALES.	Under 15,	17	2	77	1	Scarlet fever, fatal in 21 days; dysentery, 56.
		15 to 60,	20	3	162	-	Lung complaint, 120 days; 2 typhus fever, 42.
		Over 60,	7	-	-	-	
1847.	MALES.	Under 15,	6	2	28	-	2 dysentery, 7 and 21 days.
		15 to 60,	16	1	2	-	Cholera morbus.
		Over 60,	5	-	-	-	
	FEMALES.	Under 15,	16	2	56	-	2 dysentery, 42 and 14 days.
		15 to 60,	12	2	172	-	Dysentery, 10 days; inflammation of ear, sores in head, &c., 162.
		Over 60,	7	1	35	-	Gravel, 77 years old, recovered in 35 days.
1848.	MALES.	Under 15,	6	-	-	-	
		15 to 60,	17	4	51	-	Cough, 28 days; cholera morbus, 2; dysentery, 7; inflammatory rheumatism, 14.
		Over 60,	7	-	-	-	
	FEMALES.	Under 15,	14	1	28	-	Dysentery.
		15 to 60,	21	-	-	-	
		Over 60,	7	3	77	-	Dysentery, 49 days; paralysis, 7; 21.
1849.	MALES.	Under 15,	7	1	14	-	Dysentery.
		15 to 60,	15	2	13	-	Dysentery, 10 days; cholera morbus, 3.
		Over 60,	8	-	-	-	
	FEMALES.	Under 15,	14	2	142	-	Dysentery, 12 days; rheumatic fever, 130.
		15 to 60,	20	3	31	-	Consumption, 60 ds.; erysipelas, 14; paralysis, 7.
		Over 60,	7	5	123	2	2 fatal cases dysentery, 38 and 19 days; erysipelas; old age, 14; paralysis, 21.
1850—to Oct. 1.	MALES.	Under 15,	6	1	7	-	Mumps, 7 days.
		15 to 60,	14	1	14	-	Fever, 4 days.
		Over 60,	7	1	-	1	Old age; 95 1-2 years old.
	FEMALES.	Under 15,	12	1	4	-	Lung fever, 4 days.
		15 to 60,	22	2	361	1	Consumption, fatal, 150 days; rheumatic fever,
		Over 60,	5	1	7	-	Paralysis, 7. [90; dyspepsia, 60; fever, 60.

The 11th, the duration of sickness suffered to each death, is obtained by dividing the number of days sick by the number of deaths. The 12th and 13th columns represent the proportion of deaths to the living and to the attacks of sickness, and are obtained by multiplying the number of deaths by 100, and dividing the product by the number of persons and the number of attacks of sickness. It will be perceived that the males and females are presented separately, at the respective ages, for the whole period, January, 1846, to October 1, 1850; and also the total of each class and of both classes.

These observations and results are not sufficiently numerous and extensive to exhibit the average and exact law of sickness which then existed. They are, however, extremely interesting illustrations of the very simple method by which these laws, and the whole relations of sickness to health and mortality, may be ascertained. They exhibit some of the great tests of the sanitary condition of a place, and are a guide for life and health insurance. It might be extended to more minute divisions of ages, and to illustrations of the nature and characteristics of different diseases. An extensive series of exact observations of this kind, would enable us to ascertain the physical laws of an average healthy town in the State, which might serve as a basis of comparison with particular localities and different occupations.

These results, as far as they go, show that, on the average, every 100 persons of the whole of these families will have 10.6 attacks of sickness in each year, of 33.7 days duration each; and that the annual mortality will be 1.08 per cent.; or 329 days sickness to each death will be suffered. According to this result, hardly one person to one death (and not two, as stated page 172) will be constantly sick. The mortality here observed is less, however, than the average for the whole town.

The Lodge of Odd Fellows in this town has averaged about 80 members between 21 and 57 years of age; and during the five years of its existence, no death has occurred, nor a case of dangerous illness, and three cases only required watchers.

The facts we have gathered, furnish us with the means of ascertaining the rate, or proportion, or the *Law of Mortality* in Attleborough, the last 8 years. The important results are presented in the subjoined table. The average population has been assumed to be the mean between the populations of 1840 and 1850, as given on page 460. This estimate, though not quite exact, is sufficiently accurate for our purpose. The deaths in the 8 years are carefully abstracted, according to the sexes and ages. The annual mortality per cent. is obtained by dividing the number of deaths by 8, and that quotient multiplied by 100, by the population at the respective ages. The laws of mortality, as given pages 34 and 82, were thus obtained. An examination of the rate of mortality at the different ages, and a comparison with that of the tables referred to, will exhibit interesting results. The large per centage of female mortality, between the ages of 15 and 30, is a remarkable result; and probably arises from the greater number of cases of consumption which is particularly fatal to that sex at those ages.

This important table may be read thus:—It appears by the abstract, that during the 8 years there has been in this town, on the average, 443 persons under 5 years of age; and that during that time 177

of that age died, or $22\frac{1}{8}$, or 4.99 per cent. annually. And in like manner it may be read at other ages and in regard to the different sexes. Of the entire population 604 died; an annual average of 75.5, or 1.93 per cent., or 1 in 51. This is an excess of 16 deaths, or 43 per cent. annually, more than would occur if the mortality had been only $1\frac{1}{2}$ per cent., which we have supposed (pp. 82–244) to be an average healthy standard. To this standard this town might be raised by the adoption and observance of proper sanitary regulations.

Ages.	Average Population.			Deaths in 8 years, from May 1, 1842, to May 1, 1850.			Annual Mortality per cent.		
	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.
Under 5,	226	217	443	106	71	177	5.86	4.08	4.99
5 to 10,	187	205	392	12	13	25	.80	.79	.79
10 to 15,	199	180	379	6	8	14	.38	.55	.46
15 to 20,	201	230	431	10	19	29	.62	1.30	.84
20 to 30,	348	403	751	22	36	58	.79	1.11	.96
30 to 40,	239	258	497	19	19	38	.99	.92	.95
40 to 50,	192	215	407	20	17	37	1.30	.98	1.13
50 to 60,	119	164	283	17	22	39	1.78	1.67	1.72
60 to 70,	89	98	187	28	26	54	3.93	3.31	3.60
70 to 80,	43	54	97	38	32	70	11.04	7.40	9.02
80 to 90,	10	11	21	23	27	50	28.75	30.68	29.76
Over 90,	2	3	5	5	8	13	31.25	33.33	32.50
Total,	1,855	2,038	3,893	306	298	604	2.06	1.82	1.96
Under 5,	226	217	443	106	71	177	5.86	4.08	4.99
5 to 15,	386	385	771	18	21	39	.58	.68	.63
15 to 60,	1,099	1,270	2,369	88	113	201	1.00	1.11	1.06
Over 60,	144	166	310	94	93	187	8.15	7.00	7.54

The facts which have been elicited and are presented in this survey, have a direct or indirect bearing upon the social elevation, and the sanitary condition of the inhabitants; and they lead us to several important practical *Conclusions*. Some of those most available for our present purpose, are as follows:—

1. That the inhabitants of the town in their social economy; in their business enterprise, energy and success; and in their means of subsistence, of comfort, and of intellectual and moral welfare, exhibit, generally, a good specimen of the excellence of the New England character.

2. That the natural, artificial, and local arrangements of the town have developed some peculiarities; but in most respects, they are like other towns in the State. All the water power is made available to facilitate the pursuits of industry, and wherever used it has created local interests and local peculiarities.

3. That the rate of mortality shows that this town is in a more favorable sanitary condition than very many other places in the State; yet *sixteen deaths*, at least, occur here, annually, or about *one fifth of the whole mortality*, more than in some places of the same number of inhabitants; and that sixteen lives, (and probably a greater number,) *might be saved* every year, and a corresponding amount of sickness and sanitary suffering prevented, and of sanitary comfort and enjoy-

ment promoted, by forming and observing proper sanitary regulations, and by understanding and avoiding the causes of disease.

4. That causes are in operation here, as in very many other towns and cities in the Commonwealth, to produce or to foster epidemics, and to increase the amount and the fatality of sickness; and that there is no reason to doubt that these causes are, to a greater or less extent, within the control of the inhabitants, and may be mitigated, removed, or avoided.

5. That there are reasonable grounds to believe that impurities may have existed in some of the ponds and stagnant waters of the town, or in some other localities, in some seasons of the year and under some circumstances, which have been the causes of dysentery, typhus fever, and other diseases; or have concurred in accelerating their progress and in increasing their malignity and fatality.

6. That if it be possible to save *sixteen or more lives* every year, it is worth the while,—is for the interest, and it becomes the obvious duty, of the government of the town and of the individual inhabitants, to adopt and carry forward those wise sanitary measures by which it may be done. By their adoption the interests of no farmer, manufacturer, or other person, will be injured, but all will be greatly benefited; and the physical power, the productive capabilities, and the general welfare of the operatives greatly promoted.

7. That the General Plan of Sanitary Reform recommended in this Report is applicable to a greater or less extent, to this town, as it is to every town and locality in the Commonwealth; and that many of the measures recommended might here be adopted and practically carried out; and if this were properly done, the social character of the town might be elevated to a position still higher than that to which it has already attained; and the pecuniary, intellectual, moral, physical and sanitary enjoyments of the inhabitants might be greatly increased.

And several useful measures have occurred to us as proper to be *recommended*, among which are the following:—

1. That some plan be devised, that shall if possible be practicable, by which the school districts of the town may be enlarged, the system of public instruction improved, and the benefits of the money raised for the schools extended; and that one or more public schools be established of a higher grade than those which now exist.

2. That some simple and unexpensive, but efficient, organization be formed, for the protection of the lives and property of the inhabitants against fire.

3. That all undertakers and other persons who inter the dead, should be held responsible to the town clerk, selectmen, or board of health, and make the returns required by law; and that all interments in private and neighborhood grounds be discontinued.

4. That exact observations be made by professional men and other inhabitants, of the atmospheric, local and personal circumstances which attend each case of dysentery, typhus fever, consumption, and of the other most prevalent diseases, as suggested in this Report, (pp. **151, 168, 182, 313, 364,**) to ascertain what cause or causes have concurred in their production, and how far these causes may be controlled, removed, or avoided.

5. That a copy of the *Register of the Population*, and of the agri-

cultural and manufacturing establishments, and the other social statistics, for 1850, as entered by the assistant marshal under the authority of the United States, be obtained by the town, suitably bound, and deposited with the town clerk, or board of health, (if one should be chosen,) and that it be furnished with an alphabetical index for reference to each family and each establishment.

6. That a Board of Health, composed of some of the intelligent citizens of the town, be chosen or appointed, and that the measures recommended in this Report, so far as they are locally applicable and expedient, be adopted and applied to the promotion of the sanitary welfare and happiness of the people.

7. That a general report be made annually, by the selectmen, or board of health, containing a clear, concise, and simple statement of the finances, the income and expenditures, and of other public matters, of the public schools, and of the sanitary condition of the town, during the preceding year; and embracing such suggestions as it may be deemed proper to make, and which may lead to improvement; and that the same be printed in a pamphlet form, circulated and preserved.

XXVI. Annual Report of the Board of Health of the Town of Plympton, for the year 1850. By the Commission.

[The following reports are inserted for two objects—one to convey interesting sanitary information; another to illustrate a mode by which an annual report of a Board of Health may be prepared. The first, relating to Plympton, is made upon an important or special occasion, and details more particulars than are usually needful in a report for such a town. The other, relating to Lynn, also has some peculiarities, but may serve to suggest topics for notice in such reports, which may be applicable to other towns. These are not reports which were actually made by Boards of Health in those towns, but which might have been made from the facts that there existed.]

To the Inhabitants of the Town of Plympton:—

There are times when it is as proper for towns as it is for individuals to pause, to examine into their condition, to review the history of the past, and to ascertain how far they are prepared to meet the anticipations and hopes of the future. It may be the termination of a semi-centennial, a decennial, or other period of time; or the recurrence of an anniversary of some historical event. One of such periods is the year 1850. Some of the events of our history have from time to time been laid before you; but this year completes another half-century of the ordinary divisions of time, and it is the year for numbering the people of the nation, and for valuing the property of the State. These and other circumstances render it a year of more than usual importance, and will justify the Board of Health in a comparative review of the past, and a recapitulation of some facts which may, perhaps, be already familiarly known.

The town of Plympton was incorporated Nov. 26, 1695. Previous to that time, it constituted the northwest parish of Plymouth; Carver at the same time constituting the southwest parish. It was first settled, and has since been principally occupied, by the emigrants, or their descendants, from the ancient and venerable town to which it was at first attached. It is now in the hundred and fifty-fifth year of its existence; but it has never held a very important rank in population or property,

as compared with many other towns composing the sisterhood of the Commonwealth. It has had no local feature to give it prominence or peculiarity; yet its condition is not without interest to the inhabitants, and may not be entirely unimportant to people elsewhere.

For many of the facts now about to be stated, we are indebted to our venerable town clerk—Deacon Lewis Bradford, Esq.—who has past his *eighty-second* year in vigorous health. He has been reëlected this year for his thirty-ninth term; and, during the long period in which he has held the office, the records of the town have been kept with a minuteness and fidelity, in most respects, unsurpassed at any other period, or in any other town, within our knowledge.

1. *The Number and Social Condition of the Inhabitants.*

The population of the town has been nearly stationary for the last fifty years. According to the National Census of 1850, it contained 927 inhabitants, which is two less than the number given in the State census for this year. It was 861 in 1800; and the average of the last six National censuses is 895. It had 34 less, in 1800, than this average; 900, or 5 more, in 1810; 930, or 35 more, in 1820; 920, or 25 more, in 1830; 834, or 65 less, in 1840; and 927, or 32 more, in 1850. The following are the comparative details of the last three enumerations:—

Ages.	1830.			1840.			1850.		
	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.
Under 5,	58	58	116	40	50	90	46	48	94
5 to 10,	57	44	101	49	34	83	45	45	90
10 to 15,	54	61	115	56	44	100	46	44	90
15 to 20,	44	50	94	49	44	93	52	47	99
20 to 30,	69	77	146	53	55	108	93	80	173
30 to 40,	55	56	111	53	53	106	55	53	108
40 to 50,	42	43	85	47	43	90	44	47	91
50 to 60,	32	30	62	38	42	80	39	39	78
60 to 70,	18	30	48	22	23	45	31	30	61
70 to 80,	14	13	27	13	13	26	14	17	31
80 to 90,	6	8	14	5	6	11	8	4	12
Over 90,	-	1	1	-	2	2	-	-	-
Total,	449	471	920	425	409	834	473	454	927
Under 5,	58	58	116	40	50	90	46	48	94
5 to 15,	111	105	216	105	78	183	91	89	180
15 to 60,	242	256	498	240	237	477	283	266	549
Over 60,	38	52	90	40	44	84	53	51	104
Total,	449	471	920	425	409	834	473	454	927
Under 5,	13.0	12.3	12.6	9.4	12.2	10.8	9.7	10.6	10.2
5 to 15,	24.7	22.3	23.5	24.7	19.1	21.9	19.3	19.6	19.4
15 to 60,	53.9	54.4	54.1	56.5	57.9	57.2	59.8	58.6	59.2
Over 60,	8.4	11.0	9.8	9.4	10.8	10.1	11.2	11.2	11.2
Total,	100.	100.	100.	100.	100.	100.	100.	100.	100.
Av. age,	26.8	28.2	27.5	28.8	30.1	29.4	29.7	29.7	29.7

The area of the town is 14.52 square miles, or 9,310.11 square acres. There are 63 inhabitants, nearly, to a square mile, or 10 acres to each inhabitant. The following statement will show the manner in which the lands have been divided, at different periods, according to the return of the assessors to the State :—

Acres.	In 1800.	In 1810.	In 1820.	In 1830.	In 1840.	In 1850.
Of Tillage Land, . .	506	484	387	349	316	266
Of English Mowing, .	611	624	600	613	570	641
Of Fresh Meadow, .	445	415	381	415	508	354
Of Pasturage, . . .	1,263	1,147	1,046	1,366	1,362	1,999
Of Woodland, . . .	962	630	632	667	948	832
Of Unimproved Land,	2,799	3,154	2,364	2,263	3,421	2,357
Unimprovable, . . .	57	-	950	1,178	257	430
Owned by the Town,	794	690	1,443	1,115	-	1,295
Used for Roads, . .	119	-	116	161	185	166
Covered with water, .	192	-	471	480	475	480
Total, ...	7,748		8,393	8,607		8,820

This is 490 acres less, in 1850, than the actual area.

Of the 927 present inhabitants, 880, or 94.9 per cent., were born in Massachusetts; 29, or 3.1 per cent., in other States; and 18, or 2 per cent., were foreigners. Of those born in other States, 9 were natives of Maine, 3 of New Hampshire, 10 of Vermont, 3 of Rhode Island, and 4 of New York. Sixteen of the foreigners were born in Ireland, and two in France. These facts show the population to be of a remarkably stationary character. If a distinction had been made between those born in the town and those born in other parts of the State, as it should have been, a still more striking illustration would have been afforded. The ancestry of more than *two-thirds* of the whole population has been traced back to the elder pilgrims of the Mayflower.

The 927 inhabitants live in 164 dwelling-houses, and in 188 families; which is 5.6 persons to a house, and 4.9 persons to a family. According to the return of the assessors to the State Valuation Committees, the house accommodation in the town, at different periods, has been as follows :—

	Population.	Dwelling-houses.	Barns.	Other Buildings.	Total	Persons to one Dwelling-house.
1800	861	102	100	41	243	8.5
1810	900	104	101	56	261	8.6
1820	930	121	112	42	275	7.6
1830	920	131	113	42	286	7.0
1840	834	132	115	35	282	6.3
1850	927	157	138	63	358	5.9

This shows that house accommodation has been increasing.

The occupations of the male inhabitants, over 15 years of age, are as follows :—

Farmers, ...	107
Shoemakers, including two boot-makers, . . .	89
Other mechanics and manufacturers :—4 blacksmiths, 2 box-makers, 10 carpenters, 1 clothier, 4 machinists, 2 woollen	

manufacturers, 1 moulder, 9 nailers, 1 painter, 2 spinners, 2 sawyers, 12 shovel-makers, 1 tailor,	51
Professional men :—1 clergyman, 2 physicians,	3
Other occupations :—1 agent, 1 boarding-house keeper, 2 clerks, 1 conductor, 10 fishermen, 1 innkeeper, 2 pedlers, 1 seaman, 1 student, 6 traders,	35
Common laborers,	32
Persons whose occupations are not specified,	19
Total male persons in town, over 15 years of age,	336

A comparison of the agricultural produce of the town, at different periods, exhibits the following results :—

	1800.	1810.	1820.	1830.	1840.	1850.
Of Rye,	629	537	654	558	511	190
Of Oats,	574	533	739	613	660	475
Of Indian Corn,	4318	3881	3393	3092	1912	2362
Tons of English Hay,	346	291	279	378	345	459
Tons of Meadow Hay,	348	366	310	349	353	283
Number of Horses,	74	61	50	60	83	86
" " Oxen,	169	136	140	152	73	94
" " Cows,	358	325	305	241	218	270
" " Sheep,	-	-	-	170	125	51
" " Swine,	161	129	151	136	157	174

The number of farms enumerated in the census of 1850 was 71; and they contained 4,693 acres—2,538 improved, and 2,155 unimproved; the smallest contained 12 acres—10 improved, and 2 unimproved—and the largest 175 acres—85 improved, and 90 unimproved. Three were valued under $1,000, and one as low as $700; 31 between $1,000 and $2,000; 23 between $2,000 and $3,000; 10 between $3,000 and $4,000; 2 between $4,000 and $5,000; and 1 at $5,000. They had 66 horses, 194 cows, 100 working oxen, 102 other cattle, 35 sheep, 114 swine; and the annual product is stated at 260 bushels of rye, 2634 of corn, 569 of oats, 54 of peas and beans, 4,354 of potatoes, 56 of barley, and 10 of buckwheat; 13,635 pounds of butter, 4,795 of cheese, 697 tons of hay, 5 bushels of grass-seed, 94 pounds of wool, 95 pounds of beeswax; value of orchard products, $573. The whole may be stated as follows;—

Aggregate value of the farms enumerated,	$136,047
" " of the farming utensils,	6,226
" " of the live stock,	14,960
Total capital vested in Agriculture,	$157,233
Aggregate value of the annual products, estimated at the market value in the town, including value of animals slaughtered,	$14,819

The mechanical and manufacturing industry of the town is principally employed in the production of cotton printing cloths, shovels, iron tacks, boxes, and boots and shoes. Some account of these productions

was obtained in 1837, 1845, and 1850. The results, as far as they can be compared together, are as follows :—

	In 1837.	In 1845.	In 1850.
Capital invested, . . .	$86,000	$32,000	$24,500
Male operatives employed, .	29	38	46
Female operatives employed, .	35	30	9
Value of the productions, .	$81,511	$41,495	$50,059
Value of the raw material used, .	.	.	$29,935
Average monthly cost of male labor,	.	.	$1,060
Average monthly cost of female labor,	.	.	$117

The manufactures of boots and shoes were not enumerated in 1850; and, though specified in 1837 and 1845, are omitted in this statement. The cotton mill contains 1,200 spindles, and 30 looms, and produces annually 202.800 yards of cloth. Seventy-two thousand shovels, 150,000,000 tacks, and 5,000 packing boxes, were made last year.

The average monthly wages of a farm hand, with board, is .	$11 00
The average to a day laborer, with board, . . .	0 75
The average to a day laborer without board, . . .	1 00
The average wages of a carpenter without board, . .	1 50
The weekly wages to female domestics, with board, . .	1 17
Price of board to laboring men, ...	1 75

The following statement shows the valuation and proportion of $1,000, as fixed by the State at different periods. The relative proportion of $1,000 included Maine, before 1820, which then belonged to Massachusetts :—

Period.	Pop.	Polls.	Valuation.	Proportion of $1,000.	Polls to 1 Inhab't.	To 1 Poll.	Valuation to 1 Inhab't.
1800	861	197	$90,945	$1 18	4.37	$461	105
1810	900	231	78,273	1 05	3.89	338	87
1820	930	255	128,932	1 07	3.64	505	138
1830	920	231	133,677	81	3.98	578	145
1840	834	228	174,124	64	3.65	763	208
1850	927	234			3.81		

The real estate was valued, in the census of 1850, at $231,010. The true valuation of the real and personal estate, made by the assessors this year, was $405,200; and the taxes assessed were $233 for the county, $1,824 for the town, payable in cash; and $500 for highways, payable in labor.

The number of legal voters, for the last 7 years, has averaged 222; the smallest in any one year was 207, and the largest 236.

The public expenditures of the town, for the last two years, ending March 1, provided for by taxes, have been as follows :—

	1849.	1850.
Public schools, . . .	$600 00	$500 00
Almshouses and paupers, . .	420 69	454 18
Town charges, or incidental expenses,	231 47	164 99
County tax for roads, &c., . .	550 50	630 00
Total, ...	$1,802 66	$1,749 17

This is at the rate of $1 88 for each inhabitant.

For the public education of the population, six public schools, in that number of districts, are established, which receive an equal share of the public moneys. The following statement is compiled from the returns to the Board of Education :—

	1840.	1845.	1850.
Children in town of the educational age,	235	230	177
Number of public schools, . .	6	6	6
Number of scholars at school, . .	202	200	222
Average attendance at school, . .	162	148	172
Number of teachers in winter, . .	6	6	8
Money raised for the schools, . .	$500	$500	$600
Average for each child, . . .	$2.37	$2.20	$3.38
School rank of the town in the State, .	88th,	137th,	110th.
School rank of the town in the county, .	12th,	13th,	14th.

In the census of 1850, the number returned at school during the year was 233; and 9 over 20 years of age were returned as not being able to read. Of these, 4, including 3 idiots, were natives of Massachusetts, 1 of New York, and 4 of Ireland. The town clerk has registered the average age of the scholars at school in summer and in winter. For all the schools, in 1848, it was "$7\frac{166}{189}$ years" in summer, and "$9\frac{135}{199}$ years" in winter. The average number of scholars to each district was $39\frac{2}{3}$; and of the attendance, $36\frac{1}{2}$. The smallest district had 26, and the largest, 49 scholars. Contributions in fuel and the board of teachers are often made for the schools.

Nearly all the inhabitants belong to the Orthodox Congregational Society. They have a church, valued at $3,500, containing 550 sittings. The clergyman receives a nominal salary of $400, payable by subscription. The amount of his actual receipts, however, sometimes varies. Other expenses, amounting to about $50, are incurred, making the whole cost of public worship $450 annually. The services for ringing the church bell, on Sabbath days and at funerals, are disposed of by auction, annually, to the lowest bidder. In 1850, $20 was paid for that service. The number of communicants in the church, Jan. 1, 1850, was 129, of whom 31 were males, and 98 females. This is one communicant to 7.2 of the population. A Sabbath School, generally well attended, is connected with this church. A society of Universalists was formed a few years since, which at present consists of about 35 members, in feeble organization. Several voluntary associations, for benevolent or religious objects, exist in the town.

According to the census return of 1850, there are eight paupers in the town—all natives—3 males and 5 females; and they are supported at an annual expense of $454. This is one pauper to 116 inhabitants; and the cost is 48 cents for each inhabitant. The almshouse, including 30 acres of land, owned by the town, is valued at $1,000; and the average weekly cost, for the support of each pauper therein, is 87 cents. In 1840, the number of paupers was 16, and the annual expense $375. Of the present paupers, 3 are idiotic, (1 male, aged 24; and 2 females, aged 76 and 48); 1 male, aged 56, is blind, and 1 female, aged 45, is insane. The other two paupers are 1 male, aged 62, and 1 female, aged 82. There are two other insane persons in town, not paupers.

No inhabitant of this town has been convicted of crime, excepting for selling intoxicating drinks contrary to the provisions of the State laws, for more than 30 years. No licenses for their sale have been granted for more than 20 years. A few instances have occurred, in which spirituous liquors have been brought in and sold clandestinely; but such cases have been promptly detected by the voluntary "Committee of Vigilance."

The government of the town consists of 3 selectmen, 3 assessors, 3 overseers of the poor, 1 town clerk, 1 treasurer, 1 collector, 1 constable, 3 school committee men, 12 surveyors of highways, and a few subordinate officers, all chosen annually. The principal place of burial of the dead is near the meeting-house, and contains about two acres. It is in a good condition. Another ground, in the northerly part of the town, near Kingston line, is used by some families. No undertaker is appointed; at a funeral, the grave is dug and the burial made gratuitously, by some one who volunteers for the occasion. The tolling of the bell is at the expense of the town.

2. *The Movements, or Changes, of the Population.*

In this, as in all other towns in the Commonwealth, constant changes, or movements, are taking place in the population. Successive currents of life appear, unite, separate, and disappear, causing the ebbing and flooding—the incomings and the outgoings—of human existence. These changes are indicated by the number of births, marriages, and deaths.

By the unwearied attention of the town clerk, every intention of marriage, and every marriage, and every birth and death, which has taken place since Jan. 1, 1812, has been recorded; and annual abstracts, in the form of statistical tables, are made, and entered upon the records. From these sources, interesting statements may be derived.

The number of *births* is as follows:—

	In 18 years—1812–1829.			In 20 years—1830–1849.		
	Num.	Av'ge.	Proportion.	Num.	Av'ge.	Proportion.
Males,	237	13.16	or as 52.09 or as 100	229	11.45	or as 53.63 or as 100
Females,	218	12.11	to 47.91 to 91.9	198	9.9	to 46.37 to 86.4
Total,	455	25.27	100.00	427	21.35	100.00

The smallest number of births, in any one year, was 19 in 1822; and the largest, 32 in 1823, the next following year. The annual average for the first period was 25.27, or 2.85 per cent, or 1 in 35 of the population; and in the second, 21.35, or 2.38 per cent., or one in 42 of the population. This shows that the proportion of births to the population is not as great now as in former years; and it is believed that this will be found to be the fact generally throughout the State. Among the 427 births last noticed, there were 8 twin children, or 1.9 per cent. of the whole. Of these, 2 pairs were both boys, 1 both girls, and 1 a boy and a girl. No colored person has been born in the town. Of the children in the first period, four were illegitimate, and in the last, 3.

The number of "*intentions of marriage*," recorded during the first 18 years, was 185; an annual average of 10.2. Of those who entered these intentions, 100 couples, or 54 per cent., were married, and settled in Plympton. During the last 20 years, 215 were entered—an annual

average of 10.7; and 121 couples, or 56 per cent., were married, and settled in this town. The 634 persons, published prior to December 31, 1845, have been classified as follows:—

249 cases were single males to single females;
9 " " single males to widows;
39 " " single females to widowers;
20 " " widowers to widows.

Or, of the males published, 258, or 81.4 per cent., were *first* marriages, and 59, or 18.6 per cent., were subsequent marriages; and of the females published, 288, or 90.9 per cent., were *first* marriages, and 29, or 9.1 per cent., were subsequent marriages.

Of the 78 marriages in this town, since May 1, 1843, the average ages of 70 males, whose ages were known, was 29.4; and of 73 females, 24.4. The youngest female married at 13, and the oldest at 50; the youngest male married at 18, and the oldest at 76.

In 34 marriages, both were residents of Plympton;
In 8 " the male was a resident, but the female was not;
In 18 " the female was a resident, but the male was not;
In 14 " neither was a resident;
In 2 " the residence of the males was not stated;
In 1 " the residence of the female was not stated;
In 1 " the residence of neither was stated.

The number of deaths, during the 18 years, 1812–1829, was 266, or 14.77 annually; and the proportion of the sexes as 50.75 per cent. of males to 49.25 of females, or as 100 to 97. For the 20 years ending Dec. 31, 1849, the deaths were 298, or 14.9 annually; and the proportion of the sexes as 48.32 per cent. of males to 51.68 per cent. of females, or as 100 to 106.9. The smallest number in any one year was 4, in 1829, and the largest number 27, in 1847.

The excess of births over deaths was 10.51, annually, during the first period, and 6.45 during the second. The deaths of males were greater during the first, and of females during the second—showing that the emigration of the males has been greater in the latter than in the former.

During the whole period, 38 years, 1812–1849, the deaths have been 564—more than one-half of the whole number of the population—of which 51 occurred in January, 43 in February, 60 in March, 46 in April, 52 in May, 36 in June, 32 in July, 54 in August, 58 in September, 58 in October, 35 in November, and 39 in December; or 154 in the winter quarter, 134 in the spring, 144 in the summer, and 132 in the autumn. This shows a less influence of the seasons in this than in many other places.

The ages of the persons at death are entered upon the records, specifying the number of years, months, days, and sometimes the hours, that each lived; and the aggregate of all the deaths, for each year, is entered in the statistical tables. From these records we compile the following statement:—

		Aggregate Ages.			Average Ages.		
1812–31,	150 males,	5,706 ys.	1 m.	26 ds.	38 ys.	0 m.	14 ds.
	138 females,	5,395 "	10 "	4 "	39 "	1 "	6 "
	288 both sxs.	11,102 "	0 "	0 "	38 "	6 "	17 "
1832–49,	129 males,	5,222 "	10 "	8 "	40 "	5 "	25 "
	147 females,	6,418 "	7 "	24 "	43 "	7 "	29 "
	276 both sxs.	11,641 "	6 "	2 "	42 "	2 "	4 "
1812–49,	279 males,	10,929 "	0 "	4 "	39 "	2 "	1 "
	285 females,	11,814 "	5 "	28 "	41 "	5 "	6 "
	564 both sxs.	22,743 "	6 "	2 "	40 "	3 "	27 "

This shows a high average age at death ; but it results partly from the emigration from the town of the younger portion of the inhabitants, causing a small proportion to the population, of marriages and births ; and, consequently, of deaths in the younger periods of life.

It is stated that the oldest female who ever died in town was Widow Abigail Bryant, who died Feb. 1, 1820, aged 99 years, 6 months, and 10 days. Widow Deborah Bryant died Jan. 15, 1847, aged 97 years, 4 months, and 27 days. John Wright, who died May 3, 1774, in his 94th year, was the oldest male person who ever died in this town.

The diseases and causes of death were not recorded prior to the passage of the State registration laws. For the six years, 1844–1849, they have been as follows :—Apoplexy, 1 ; disease of bowels, 7 ; disease of brain, 3 ; consumption, 12 ; cancer, 2 ; croup, 1 ; dysentery, 8 ; dropsy, 3 ; erysipelas, 1 ; scarlet fever, 3 ; lung fever, 2 ; gravel, 1 ; hooping cough, 2 ; disease of the heart, 2 ; jaundice, 1 ; hemorrhage, 1 ; disease of the kidney, 1 ; spinal complaint, 1 ; old age, 9 ; pleurisy, 1 ; paralysis, 6 ; rheumatism, 1 ; disease of the stomach, 1 ; stranguary, 1 ; unknown causes, 9—Total, 80. According to this statement, the zymotic diseases produce about 18 per cent. ; and consumption about 15 per cent. of the deaths, or 1 in 447, annually, of the whole population.

The following statement shows the relative proportions of the living and the dead, at different periods of life :—

	Under 5.	5 to 15.	15 to 60.	Over 60.
Proportion of the living, . .	11.19	21.59	56.82	10.40
Proportion of the dead, . .	22.87	7.09	35.46	34.48

We have now accumulated a sufficient number of facts, to ascertain the law of mortality which has been in force in Plympton for the last 38 years. This is presented and illustrated in the subjoined table. The first column represents the classes of persons upon which the calculations are based : the first according to ages, the second according to sexes and different periods of time, the third according to seasons of the year, and the fourth according to disease. In this case, a single disease only is given as an illustration, which may be extended to other diseases. The second column represents the average population, or number of persons of both sexes living, obtained by taking the mean of the last three enumerations. The third column represents the actual number of deaths that took place in the 38 years, 1812-1849, divided into different classes. The fourth column is the annual mortality, or number of deaths, expressed in numbers and fractional parts, obtained

by dividing the whole number of deaths by the number of years observed. The sixth column represents the annual mortality per cent., or the number of persons that have died, during one year, in 100 persons living, and is obtained by dividing the annual mortality by the number of the living in each class. The fifth column is obtained by subtracting the sixth from 100, and represents the number of persons in 100 that have survived during one year, in each class. The seventh column is obtained by dividing the fifth by the sixth, and represents the number of probabilities of living to one probability of dying.

Classes.	Average population, or persons living in 1812—1849	Total number of deaths in 38 years. 1812—1849.	Annual number of deaths, or mortality.	Annual Mortality per ct. Or, in 100 persons, the probabilities		Number of probabilities of living to 1 of dying.
Ages.				Of living, were	Of dying, were	
1	2	3	4	5	6	7
Under 5,	100	129	3.3946	96.61	3.39	28
5 to 10,	92	22	.5789	99.38	.62	160
10 to 15,	101	18	.4737	99.54	.46	216
15 to 20,	96	27	.7106	99.26	.74	134
20 to 30,	142	49	1.2892	99.10	.90	99
30 to 40,	108	47	1.2369	98.86	1.14	86
40 to 50,	88	42	1.1053	98.75	1.25	79
50 to 60,	74	35	.9211	98.76	1.24	79
60 to 70,	52	41	1.0789	97.93	2.07	47
70 to 80,	28	65	1.7105	93.89	6.11	15
80 to 90,	12	66	1.7369	85.53	14.47	5
Over 90,	1	23	.6052	39.48	60.52	-
Total,	894	564	14.8418	98.54	1.66	59
Under 5,	100	129	3.3946	96.61	3.39	28
5 to 15,	193	40	1.0526	99.46	.54	184
15 to 60,	508	200	5.2631	98.97	1.03	96
Over 60,	93	195	5.1315	94.49	5.51	17
1812—1829						
Males,	457	135	7.5000	98.36	1.64	59
Females,	460	131	7.2777	98.42	1.58	62
Both,	917	266	14.7777	98.39	1.61	61
1830—1849						
Males,	449	144	7.2000	98.40	1.60	61
Females,	445	154	7.7000	98.27	1.73	56
Both,	894	298	14.9000	98.34	1.66	59
1812—1849						
Winter,	894	154	4.0526	99.55	.45	221
Spring,	894	134	3.5262	99.61	.39	255
Summer,	894	144	3.7894	99.58	.42	237
Autumn,	894	132	3.4736	99.62	.38	261
1844—1849						
Consumpt'n	894	12	2.0000	99.78	.22	453

The table may be read thus. It appears that there has been, in Plympton, on the average, for the last 38 years, 100 persons under 5 years of age; and, among this number, 129 have died, or three and a fraction annually. This shows that there is a probability or chance that 96.61, in every 100 of this class, will live through one year; that 3.39 will die during one year; and that there are 28 probabilities or chances of living to one of dying. And in like manner the other

classes in the table may be read. As to the seasons, it appears that 894 persons lived in the winter quarter of each year, and in that period of the year 154 died, or 4 and a fraction in each of the 38 years; and that there has been 99.55 probabilities, in every 100, of living through the quarter, and .45 of dying before it expires; or, the probabilities or chances of living have been 221 to 1 of dying. Upon the same principle, a table may be constructed to extend to different months and diseases. It appears that the probabilities of living in this town without consumption, are as 453 to 1, of dying by consumption. This is the *Law of Mortality*, or the probabilities or chances of living and dying, which have existed in this town. It illustrates the important principles on which life insurance is founded, and by which the sanitary condition of different places and populations, under different circumstances, may be accurately measured and ascertained.

By referring to the law of mortality, as stated in the Report of the Sanitary Commission, (p. 82,) it appears that the annual mortality per cent. in Boston, for the last 9 years, for persons under 5 years of age, has been 9 per cent., and for the whole population, 2.53 per cent. This gives, for those under 5 years of age, 91 in 100 as the probabilities of living, and 9 as those of dying; or the chances of living to dying are as 10 to 1, or only about one-third as great as they are in Plympton. And for the whole population it gives 97.47 in 100 as the probabilities of living, and 2.53 as those of dying; or the chances of living to dying are as 38 to 1, or 55 per cent. greater than those of the whole population of this town.

It is assumed, in the report referred to, that an average healthy town in this State suffers an annual mortality of 1.5 per cent. This gives 98.5 in 100 as the probabilities of living, and 1.5 as the probabilities of dying; or the chances of living to dying are as 65 to 1, which is 6 chances in 59, or 10 per cent. more favorable than that of Plympton.

In view of the knowledge which the Board of Health have obtained, as to the social and sanitary condition of Plympton, they are led to conclude :—

1. That the town exhibits a remarkable example of a stationary population, and affords the means of illustrating important general principles. The stream of emigration that has flowed into the town has been much smaller than that which has flowed out of it. The difference is the natural increase.

2. That in their social and moral characteristics the inhabitants have preserved, in an unusual degree, the peculiar excellences of their ancestry. The town has been less influenced by the introduction of strangers and foreigners, than very many other towns in the State.

3. That the town enjoys a favorable sanitary condition, but one more favorable may be attained. The amount of sickness and suffering here may be lessened, and the length of human life extended.

And the Board recommend :—

1. That the inhabitants persevere in their exertions to prevent intemperance, and to emulate the character of their ancestry.

2. That every family should make frequent examinations in and about their habitations, and ascertain and remove, as far as practicable, local causes of disease.

3. That exertions be made, by every inhabitant, to learn the local

and personal causes of different diseases, and the means by which they may be avoided.

4. That the measures recommended in the Report of the Sanitary Commission, and by the General Board of Health, for the promotion of the sanitary welfare of the State, so far as they are applicable to our people, be more fully studied and observed; and that exertions be made, by each and every person, to carry them into effect.

By heeding these and other measures which might be recommended, and which a more full knowledge of the laws of life and health will suggest, we may reasonably hope that the force of mortality pressing upon us may be lessened, that a longer life may be expected and attained, and that more happiness may be enjoyed while life continues.

Respectfully submitted by

A. B.,
C. D.,
E. F.,
} *Board of Health.*

Plympton, Nov. 1, 1850.

XXVII. Annual Report of the Board of Health of Lynn.

[This report purports to be for the year ending March 1, 1850, though it is dated and contains information subsequently to the period at which it would have been proper that it should be made. This apparent anomaly will not diminish the force of the facts, and the intended illustrations, which it presents. See p. 126, and explanatory note, page 487.]

To the Inhabitants of the Town of Lynn:

The Board of Health in submitting their annual report at this time, seem to be called upon, in the discharge of their duty, to notice more particularly than usual the circumstances that have transpired in the sanitary history of the town; and they proceed to do it in as concise a manner as the great importance of the topics to be noticed will admit.

1. *Proceedings of the Board of Health.*

The Board of Health, at their election, March 12, 1849, felt that an office of labor and responsibility had been conferred upon them; and they have been desirous of discharging its duties in such a manner as would be satisfactory to themselves and useful to their fellow-citizens. During the year 1848, a portion of the town suffered very severely from an epidemic dysentery; and when the board was constituted, it was still suffering from scarlatina—also a dreadful scourge. The Asiatic cholera, too, had then appeared in some parts of the country; and it was apprehended that it might extend its ravages to this State and neighborhood, and perhaps to this town.

It was supposed that a clear conception did not exist, in the minds of the inhabitants generally, as to the powers and duties of boards of health; nor as to the manner in which they might be publicly beneficial. The act establishing the Board of Health was passed June 16, 1821, and under it such boards have been nominated and chosen in town meeting, like tithing-men, fence-viewers, and other similar officers; and the members seem to have considered the office rather a nominal than an active one; and seem to have acted, when they acted at all, upon their individual responsibility, without much systematic

organization or coöperation. No records of their proceedings, if any were kept, have come to our knowledge. The present board deemed it their duty to pursue a different course; and, immediately after their election, organized by the choice of a chairman, a secretary, and a consulting physician.

The act provides that "it shall be the duty of said Board of Health and of each member thereof, to examine into all nuisances and all other causes injurious to the health of the inhabitants; whether the same shall be caused by stagnant waters, drains, common sewers, slaughter-houses, tan-yards, fish, fish-houses, docks, necessaries, hog-styes, putrid animals, or any other causes whatsoever, which in his or their opinion may exist in any dwelling-house, cellar, store, or other building, ship, or vessel;" and it prescribes the modes of discharging these duties. To carry out the intentions of this act and render themselves still further useful, the board prepared and circulated the following rules and regulations:—

Sect. 1. No person, unless by permission of this board, shall deposit, or cause to be deposited, in any street, court, square, lane, alley, or vacant lot, or into any pond or water of the town, any dirt, soot, ashes, cinders, hair, shreds, manure, oyster or lobster shells, waste water, rubbish, or filth of any kind, nor any impure animal or vegetable substance whatever, nor any dead animal, nor any foul or offensive ballast; nor shall any person land any such foul or other offensive ballast, or impure animal or vegetable substance within the town. And whenever any offensive matter, which shall be the cause of nuisance or sickness, shall be found accumulated in any house, yard, or other place, and the Board of Health shall deem it necessary to remove it, notice shall be given to the owner or occupant of such place, forthwith to remove the same; and if it is not done within a reasonable time, the board aforesaid will remove the same at the expense of the owner or occupant.

Sect. 2. It shall be the duty of every owner or occupant of any house or tenement, to provide, (if not already provided) a good and suitable drain or sewer, leading from the sink to a vault or cesspool, under ground, of a sufficient capacity; and if any person shall neglect or refuse to comply with the foregoing ordinance, on or before the twentieth day of May next, the board will cause the same to be done at the expense of said owner or occupant.

Sect. 3. Every privy shall have a vault of suitable and proper size, sunk into the ground, to be walled up with stone or other material, in a manner to prevent all leakage or overflow upon the surface; and if any person shall neglect or refuse to comply with this ordinance, on or before the twentieth day of May next, the board will cause the same to be done at the expense of the owner or occupant of the premises to which it may be attached.

Sect. 4. No person shall empty, or cause to be emptied, any vault or privy, except between the hours of 10, P. M. and 5, A. M.; nor shall any such vault or privy be emptied between the first day of June and the first day of September, except by permission of this board.

Sect. 5. Whenever infectious and contagious sickness exists in any part of the town, it shall be the duty of the heads of the family and the attending physician, where said infection is, to communicate notice thereof to the Board of Health, to the end that such action may be taken as will prevent the spread of said disease.

Sect. 6. All animals kept within the town shall be so kept as not to be offensive to the inhabitants; and whenever notice is given by the Board of Health to the keepers of animals that the same are offensive and a source of nuisance, the same must be removed within twenty-four hours after said notice, or it will be done by the board, at the expense of the owners or keepers of said animals.

Sect. 7. For any offence against the provisions of the foregoing sections, which take effect on and after the date of publication, except such as are otherwise provided, the offender or offenders shall forfeit and pay a sum not exceeding fifty dollars.

Under the operation of these regulations complaints were frequently presented to the board, especially in the summer season, concerning nuisances in out-houses, in the streets, in the harbor, and in various other places in the town, all of which were carefully investigated; and such measures adopted in each case as seemed to be proper.

During the past year two epidemics, presently to be noticed, have been manifested. In August the Asiatic cholera appeared at the alms-

house and excited so great an alarm that it was difficult to obtain for the sick proper accommodations, attention and nursing; and the board felt called upon to devote to them much of their own time. It became necessary to provide temporary accommodations for the inmates of the almshouse, and a hospital for the cholera patients. Each case was investigated; two male and two female nurses were employed, and everything else done within our power, for the comfort of the sick and to arrest the disease. The infected localities were cleansed and the causes of disease removed.

In January the small-pox broke out in a house in a court between Union and Spring streets, near the Eastern Railroad station; and afterwards spread into other houses in the neighborhood. At this time, also, special efforts of the board were required to control the disease, and prevent its general prevalence.

Both of these epidemics were great calamities; but not so great as was apprehended, at their first outbreak. The events of the year have imposed upon the board a large amount of personal labor, and they have necessarily incurred considerable expense. It is believed, however, that much more would have been incurred, if the labors which have been performed under their direction, had been omitted; and that several human lives have been saved, which would otherwise have been lost. The following is a statement of the expenditures:—

For removing and destroying nuisances, . .	$50 00
" providing hospital accommodations for the sick, .	40 74
" medical attendance and medicine, . .	95 00
" personal services of the board, nurses, and others,	158 06
Total, ...	$343 80

The expense of subsistence at the hospital, and of the burial of the dead, was paid by the overseers of the poor.

2. *The Social and Personal Condition of the Inhabitants.*

The sanitary welfare of a people depends, in a greater or less degree, upon their social and personal condition; and such facts and social statistics as will serve to illustrate these matters, and show their movements or changes from year to year, should be concisely stated, annually, without omission, either by the Board of Health, by the Selectmen, or by some other official authority, and published for the general benefit. We understand that such a statement is not expected from any other source this year, and the Board of Health deem it their duty at this time to exhibit several characteristics of our social and sanitary condition and progress. To add force to the illustrations we have in some instances given and compared facts of a similar kind, which existed in former periods of our history.

1. The *local features* of Lynn have peculiarities which have attracted much public attention. Nahant, Phillips's Beach, and other places, have long been the resort of persons from abroad, who are seeking relief from the depressing influences of summer heat or a city life. They have been so often described that description is unnecessary. Those who may wish for information on these matters, may find it in the valuable work of Mr. Lewis, the historian of the town, to whom we are indebted for the accompanying geographical illustration.

The number of permanent settlers, temporary residents, and transient visiters, has been as great during the past as in any previous year.

2. We deem it proper, however, to present the figures which show how the lands of the town were divided by the assessors, in their reports to the valuation committees of the State.

Acres.	In 1800.	In 1810.	In 1820.	In 1830.	In 1840.	In 1850.
Of Tillage Land, . .	9,01	854	516	607	598	419
Of English Mowing, .	1,232	1,204	1,077	1,036	924	1,360
Of Fresh Meadow, .	399	310	50	44	59	41
Of Salt Marsh, . .	1,102	725	125	278	210	246
Of Pasturage, . . .	4,080	2,877	2,565	2,154	2,168	2,090
Of Woodland, . . .	566	1,029	742	993	1,107	1,915
Of Unimproved Land,	1,622	1,114	347	101	48	15
Unimprovable, . . .	1,150	787	150	121	3	.
Owned by the Town,	.	1,094	373	259	91	241
Used for Roads, . .	270	389	240	.	204	319
Covered with water, .	511	546	300	354	196	388
Total, ...	11,833	10,929	6,485	5,947	5,608	7,034

The area of the town is stated by Mr. Lewis, at 15 square miles, or 9,360 acres, which is 2,326 less than the return of the assessors in 1850. Great Nahant contains 470 acres, Little Nahant 45. The water in ponds and brooks 175, and in the Lynn half of Saugus River 109. In Lynn proper and Swamscot, there are 55 miles and 176 rods of roads; in Nahant, including beach road, 6 miles, 68 rods.

3. The *population* of Lynn has increased rapidly within the last few years, and according to the U. S. Census was 14,257 in 1850. It now ranks in population as the 9th town in the State and the 3d in the county. In 1800 it was 2,837; in 1810, 4,087, or an increase of

1,250, or 44 per cent.; in 1820, 4,515, or an increase of 428, or 10 per cent.; in 1830, 6,133, or an increase of 1,618, or 35 per cent.; in 1840, 9,367, or an increase of 3,234, or 52 per cent.; in 1850, 14,257, or an increase of 4,890, or 52 per cent. Censuses were taken in 1840 and 1850, by the authority of the State, giving in the former period 9,075, or 248 less than the census of the United States; and in the latter, 13,613, or 644 less.

The town is divided into nine school districts, which, by the city charter, are established as wards. The following details afford some idea of their relative size. The inhabitants of the several wards were not separately enumerated in the United States Census :—

Wards.	Local Name.	Census, May 1, 1849.	Legal Voters, Nov. 1850.	Representatives in Com. Council.
1,	Swamscot, . .	775	179	2
2,	Wood End, . .	1,930	457	4
3,	Graves End, . .	549	124	1
4,	Railroad Station,	2,684	629	5
5,	Common, . . .	2,815	593	5
6,	Breeds End, . .	3,003	581	5
7,	Tower Hill, . .	371	69	1
8,	Nahant, . . .	215	44	1
9,	North Western, .	261	55	1
	Total, . . .	12,603	2,731	25

In the State Census of 1850, taken by Mr. Lewis, Lynn proper had 12,475 persons—6,082 males, and 6,393 females; Swamscot, 901—436 males, and 465 females; Nahant, 237—121 males, and 116 females. And the whole city had 13,613—6,639 males, and 6,974 females, giving an excess of females of 335. In this enumeration the paupers, criminals, and some others, were omitted. It entitles the town to 4 representatives in the Legislature. If this census had shown a population equal to that returned in the census of the United States, the town would have been entitled to an additional representative for the next ten years.

The lists of legal voters contained 2,731 names, November 2, 1850, or 1 to 5.2 of the population. There is no military company in this town. The enrolled militia are 1,309.

The colored persons were 13 in 1800; 7 in 1810; 8 in 1820; 11 in 1830; 44 in 1840. In 1850 they were 110—65 blacks and 45 mulattoes; of whom 60 were males and 50 females.

In 1850 there were 15 insane persons, of whom 13 were males, averaging 39 years of age each, and 2 females, averaging 61 years.—33 deaf persons, of whom 15 were males, whose ages, on the average, were 48, and 18 females, whose ages were 54; of these 6 were entered as deaf and dumb.—13 idiotic persons, of whom 8 were males, whose average ages were 31, and 5 females, whose averages were 35. Of all the above classes, 54 were natives of Massachusetts, 5 of New Hampshire, 1 of Virginia, and 1 of England.

The comparative sexes of the population at different periods, will appear from the following statement :—

Periods.	Persons.	Males.	Females.	Proportion. Males.		Females.
1800,	2,837	1,481	1,356	52.20	to	47.80
1810,	4,087	2,108	1,979	51.58	"	48.42
1820,	4,515	2,270	2,245	50.28	"	49.72
1830,	6,133	3,031	3,102	49.42	"	50.58
1840,	9,367	4,588	4,779	48.98	"	51.02
1850,	14,257	6,918	7,339	48.52	"	51.48

The following detailed statement of the sexes and ages of the population, forms an essential element for estimating their comparative sanitary condition :—

Ages.	1830.			1840.			1850.		
	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.
Under 5,	413	465	878	737	673	1,410	854	831	1,685
5 to 10,	372	365	737	527	537	1,064	731	761	1,492
10 to 15,	358	342	700	488	506	994	681	734	1,415
15 to 20,	370	334	704	469	492	961	683	783	1,466
20 to 30,	639	620	1,259	940	949	1,889	1,517	1,647	3,164
30 to 40,	405	399	804	610	622	1,232	1,123	1,102	2,225
40 to 50,	218	244	462	415	466	881	658	631	1,289
50 to 60,	128	160	288	214	265	479	394	450	844
60 to 70,	87	108	195	108	148	256	173	258	431
70 to 80,	30	48	78	69	97	166	85	103	188
80 to 90,	11	14	25	10	22	32	17	36	53
Over 90,	-	3	3	1	2	3	2	3	5
Total,	3,031	3,102	6,133	4,588	4,779	9,367	6,918	7,339	14,257
Under 5,	413	465	878	737	673	1,410	854	831	1,685
5 to 15,	730	707	1,437	1,015	1,043	2,058	1,412	1,495	2,907
15 to 60,	1,760	1,757	3,517	2,648	2,794	5,442	4,375	4,613	8,988
Over 60,	128	173	301	188	269	457	277	400	677
Total,	3,031	3,102	6,133	4,588	4,779	9,367	6,918	7,339	14,257
Proport'n.									
Under 5,	13.63	14.99	14.32	16.07	14.08	15.06	12.35	11.32	11.82
5 to 15,	24.08	22.79	23.43	22.12	21.83	21.97	20.41	20.37	20.39
15 to 60,	58.07	56.64	57.34	57.72	58.46	58.09	63.24	62.86	63.04
Over 60,	4.22	5.58	4.91	4.09	5.63	4.88	4.00	5.45	4.75
Total,	100.	100.	100.	100.	100.	100.	100.	100.	100.
Av. age,	23.2	24.2	23.6	23.5	25.2	24·5	25.4	26.0	24.7

The census of 1850 shows 63.04 per cent. in the productive periods of life, a larger proportion than in 1840, or 1830, which is an evidence of increasing prosperity. The average age has also increased a little, though the comparative variation is small.

4. The *government* of this population has hitherto been in the usual form of town organization; and as it is the last year in which such a government will exist here, it may not be improper to state that it has consisted of 1 town clerk, 1 treasurer, 1 collector of taxes, 5 selectmen and assessors, 3 overseers of the poor, 9 school committee-men, 10 constables, chosen by ballot; 3 fish committee-men, 19 tithing-men,

6 fence-viewers, 9 surveyors of lumber, 12 measurers of wood, 20 field-drivers and hog-reeves, 1 pound-keeper, a board of health of 5 members, 9 inspectors of lime, 2 inspectors of shingles and clapboards, 1 surveyor of highways, and 5 auditing committee-men, chosen by nomination and hand vote. There are also in the town 2 notaries public, 4 coroners, and 1 deputy sheriff. A fire department was established March 23, 1836; and a police court, April 5, 1849.

On the 12th of March, 1849, the town voted, by 651 yeas and 429 nays, to petition the Legislature for a city charter. It was obtained, and on submitting it to the people, on the 20th of April, it was rejected, by a vote of 838 yeas and 950 nays. On the 1st of April, 1850, it was voted, by 342 yeas to 251 nays, to renew the application. A charter was obtained, which, on submitting it to the people, was accepted, by a vote of 1,047 yeas to 987 nays, a majority of 60 votes only in its favor; and this majority, it has been stated, would have been greatly lessened or entirely annulled, had not the fishermen been accidentally detained in the bay, by adverse winds, and prevented from going to the polls. Lynn is consequently hereafter to be governed as a city.

5. The *birth place* of the people is an interesting characteristic. So far as indicated by the United States Census of 1850, it appears that of the population of this town, there were born—

1. In Massachusetts, ...	10,729, or	75.25	per cent.
2. In other parts of the United States, .	2,125, "	14.91	"
3. In British possessions and West Indies,	182, "	1.28	"
4. In Europe and other foreign countries,	1,221, "	8.56	"
Total, ...	14,257, "	100.	"

Of the 2d class, 792 were born in Maine, 844 in New Hampshire, 145 in Vermont, 35 in Rhode Island, 60 in Connecticut, 116 in New York, 15 in New Jersey, 37 in Pennsylvania, 2 in Delaware, 28 in Maryland, 10 in Virginia, 5 in North Carolina, 1 in South Carolina, 3 in Georgia, 1 in Alabama, 5 in Mississippi, 5 in Louisiana, 1 in Texas, 7 in Ohio, 1 in Michigan, 2 in Indiana, 3 in Illinois, 2 in Kentucky, 3 in Missouri, and 2 in Oregon.

Of the 3d class, 142 were born in Nova Scotia, 32 in Canada, 4 in West Indies, and 4 in other places.

Of the 4th class, 159 were born in England, 992 in Ireland, 40 in Scotland, 5 in France, 1 in Portugal, 13 in Germany, 1 in Switzerland, 4 in Italy, 3 in Denmark, 1 in Sweden, 1 in Africa, and 1 in Manilla.

6. The *occupations* of the people, appear from the following statement, compiled from returns of the census of 1850:—

1. *Agriculturists and Horticulturists*:—138 farmers, 18 gardeners, 1 dairyman, ...	157
2. *Makers of Shoes and Shoe Materials*:—128 shoe manufacturers, 1,872 shoemakers, 16 last makers, 147 morocco dressers, 44 tanners, 16 tool makers, .	2,223
3. *Other Mechanics and Manufacturers*:—48 bakers, 35 blacksmiths, 2 bleachers, 4 block cutters, 9 block	

	printers, 2 book-binders, 6 brick makers, 10 cabinet makers, 4 calico printers, 257 carpenters, 1 color mixer, 12 confectioners, 1 cooper, 1 glue maker, 1 gold beater, 8 hair dressers, 5 harness makers, 1 hatter, 3 jewellers, 50 masons, 12 millers, 1 millwright, 1 moulder, 1 nail maker, 84 painters, 7 paper manufacturers, 1 paper pounder, 2 pianoforte manufacturers, 1 plumber, 26 printers, 1 pump maker, 1 perfumer, 4 ropemakers, 1 saddler, 2 sailmakers, 5 silk dyers, 12 silk printers, 1 silver plater, 9 soap boilers, 9 tailors, 10 tinners, 1 tinplate worker, 5 tobacconists, 2 watchmakers, 1 weaver, 13 wheelwrights, 1 woollen manufacturer, 4 wood turners, 1 wool dyer, 5 wool staplers, ...	684
4.	*Seafaring Men* :—2 boatmen, 183 fishermen, 1 pilot, 78 seamen, 1 shipping master, . . .	265
5.	*Merchants and Traders* :—92 accountants and clerks, 6 apothecaries, 1 broker, 1 cashier, 105 merchants, 187 traders, 1 wharfinger, ...	393
6.	*Public Officers* :—1 British consul, 1 city clerk, 1 city marshal, 1 customhouse officer, 1 Danish consul, 1 deputy sheriff, 1 jailor, 1 notary public, 1 post master, 2 undertakers, ...	11
7.	*Professional Men* :—2 architects, 5 artists, 1 chemical artist, 1 chyropodist, 21 clergymen, 1 counsellor, 2 dentists, 2 editors, 1 historian, 2 musicians, 25 physicians, 17 school teachers, 1 surveyor, . .	81
8.	*Other Occupations* :—1 boarding-house keeper, 8 butchers, 5 coachmen, 2 depot masters, 1 drover, 1 express, 1 gentleman, 4 hostlers, 11 innkeepers, 1 newsman, 1 restorateur, 21 stablers, 1 stage-driver, 13 students, 59 teamsters, 1 waiter, . . .	131
9.	Common laborers, ...	355
10.	Persons over 15 years of age, whose occupations are not specified, ...	352
	Total male persons in the city, over 15 years of age, .	4,652

7. The *labor* of the inhabitants has continued to be principally mechanical. Agriculture, commerce, and the fisheries, have given employment to a portion, but only a small portion, of the people. The following is the general price of labor, as stated in the United States Census of 1850 :—

Average monthly wages of a farm hand, with board, .	$13 00
Average to a day laborer, with board, . . .	0 75
Average to a day laborer, without board, . . .	1 00
Average day wages to a carpenter, without board, .	1 50
Weekly wages to a female domestic, with board, .	1 50
Price of board to a laboring man, per week, . .	2 50

The following facts, derived from the returns of the assessors to the

valuation committees, at different periods, give a comparative view of the agricultural productions :—

Articles of Produce.	In 1800.	In 1810.	In 1820.	In 1830.	In 1840.	In 1850.
Bushels of Indian Corn, - -	14,917	10,301	10,447	5,412	4,401	1,493
" of Rye, - - - - -	7	54	15	167	387	140
" of Oats, - - - - -	90	229	80	20	292	30
" of Barley, - - - -	1,225	1,281	1,055	537	255	80
Tons of English Hay, - - -	844	833	928	1,121	1,302	1,362
" of English Meadow Hay,	246	205	36	75	28	17
" of Salt Marsh Hay, - -	909	607	73	276	176	209
Horses, - - - - - - - -	186	215	161	219	248	455
Oxen, - - - - - - - - -	215	185	102	88	61	56
Cows, - - - - - - - - -	731	627	450	453	308	347
Swine, - - - - - - - - -	452	477	403	445	376	301

This statement shows a decline, generally, in the amount of agricultural productions. English hay has increased, but fresh meadow and salt hay has decreased, showing an improvement in the use of the lands. The use of oxen has given place to that of horses.

In the census of the United States, 51 farms were enumerated, with the following results. The whole contained 7,516 acres—1,159 improved, and 6,357 unimproved. Of these farms, 9 were valued under $1,000; 12 from 1 to $2,000; 8 from 2 to $3,000; 4 from 3 to $4,000; 5 from 4 to $5,000; 2 from 6 to $7,000; 2 from 7 to $8,000; 1 from 9 to $10,000; 2 from 10 to $11,000; 1 at $12,000; 2 from 13 to $14,000; 1 at $15,600; 1 at $16,000; and 1 at $17,000.

The aggregate cash value of these farms, . .	$223,273
" " " of the farming utensils, .	7,130
" " " of the live stock, . .	16,532
Total capital vested in agriculture, . . .	$246,935

The produce enumerated, was 4,053 bushels of Indian corn, 506 of rye, 50 of oats, 10,332 of potatoes, 409 of barley, and 1,216 tons of hay; and the whole valued, including $13,428 in garden produce, at $39,778.

Some indication of the commerce of Lynn, may be derived from the number of superficial feet of wharf, and tons of shipping, including small craft of 5 tons and upwards :—

	In 1800.	In 1810.	In 1820.	In 1830.	In 1840.	In 1850.
Wharf, . .	3,910	8,453	131,150	67,590	162,808	489,077
Shipping, . .	189	105	243	739	7,978	1,194

In 1837 there were 5 vessels engaged in the whale fishery, now only 2. A less number of vessels engaged in the coasting trade, is now owned in Lynn than formerly; though the number of coasting vessels which are owned in other places and arrive here, is not materially lessened.

The Phillips' Beach fisheries give employment to a considerable amount of labor, which has very much increased within a few years. They were commenced in 1796, when one boat, with five men, was

employed. In 1825, 5 boats and 35 men were employed; in 1835, 7 boats and 65 men; in 1845, 11 boats and 80 men; and in 1850, 14 boats and 140 men, independent of the small "dories." The boats are built in the most thorough manner, after the most perfect model. None are better sailers; and none, under their skilful managers, are more controllable in all kinds of weather. They measure from 20 to 60 tons, usually from 40 to 50. A boat of the latter class costs about $2,800 to $3,500. Each is owned in company, by 5 to 7 men, by whom it is managed. A voyage extends 8 to 15 miles out, in winter, and 50 to 60, in summer; and is commenced so as to be on the fishing station at early daylight, and finished in season to return the same evening. Sometimes, in summer, it extends over two days; and sometimes the men return so late that they weigh out their fares, and go immediately out again, without sleep. Codfish of excellent quality are found in this locality, from October to February; and are caught most easily in about 150 feet of water on a rocky bottom. A single fish weighs from 3 to 75 lbs.; and each man takes daily, on the average, about 500 lbs. From 50,000 lbs. to 100,000 lbs. are caught daily, by all the fishermen of the place. From February to June, about 40 or 50 haddock are taken, on the average, by each man. Mackerel are more uncertain; and halibut rare, as also are other fish. The fish are dressed in the boat and disposed of, immediately on arrival, to marketmen, and carried to Boston, during the night; or are packed, ready to forward by the next railroad train, to any part of the State. A fine salted article is sometimes cured and "dunned." Accounts are kept, and the earnings divided weekly or monthly among the crew. A boat of 36 tons, managed by 5 to 7 men, has been known to earn $10,000 a year, during 4 years in succession. All are not equally successful. $10 per week is a fair average of the earnings in summer. The average in winter is greater.

The fishermen reside principally in Swamscot, and are a very healthy class of men. Their dress consists of a warm suit of substantial woollen cloth, large thick boots, and an oversuit of India rubber cloth. Their food is prepared in the families to which they belong, and consists of good articles, well cooked, and neatly packed in "firkins." Mince pies, which often offend dyspeptic stomachs, are not only agreeable, but almost an indispensable article of a fisherman's diet. Cases of consumption or of severe sickness originating among them, are very rare. Within the last 30 years, 4 persons only of this place have been lost at sea; and one of those was accidentally caught and eaten by a shark.

From the cods' livers, "fish oil," used for manufacturing purposes, is made. Within the last three years, the Swamscot fishermen have turned their attention to the manufacture of *cod liver oil*, the popular medical remedy in consumptive diseases; and they make a good article, pure and sweet, in great quantities. More than 4,500 gallons were made the last year; over 4,000 by one establishment. The process here is very simple. The fattest and largest of the livers, as they are taken from the fish, are selected and placed by themselves. On arrival they are put into a "water bath" of peculiar construction, heated to a temperature of 200 degrees, and mashed fine and pressed. The oil immediately rises to the top, and is dipped out and filtered

through a fine cloth, when it is put into casks or bottled for use; the whole process not occupying more than an hour and a quarter. The sooner it is pressed the better. A liver 24 hours old is unfit for use. A gallon of oil weighs about 7½ lbs. A codfish of 25 lbs. has a liver of 2 to 3 lbs., which will produce one-third of its weight in pure oil.

The manufacturing and mechanical labor of the town, afford a subsistence to a large portion of the inhabitants. The following articles, (excepting shoes presently to be specified,) and soap, were all that were enumerated in the United Census for 1850:—

	Leather.	Morocco.	Lasts.	Hangings.	Glue.	Tobac.
Capital invested, - -	(3) $23,500	(3) $73,000	(2) $3,200	(1) $20,000	$5,000	$3,000
Value of raw material,	242,500	179,500	1,200	25,000	9,000	2,000
Males employed, - -	66	110	12	35	7	4
Females employed, -	15	-	-	10	-	12
Monthly value of labor,	$1,907	$3,095	$400	$880	$240	$244
Value of annual product,	288,000	282,100	13,000	75,000	25,000	6,005

This gives a very imperfect view of the mechanical labor of the town. Chocolate, spices, confectionary, sashes and blinds, dyed and printed goods, and various other articles, which were enumerated in the industrial statistics of 1845, are still manufactured, many of them to a larger extent; and the manufacturing of shoemakers' tools, bread, and various other articles, not then enumerated, has been introduced.

Shoes are the great production of the town. Ladies' gaiter boots and ladies' shoes, and misses' and children's shoes, are the only articles made. Some idea of the vast extent of this business may be formed from the following statement, compiled from official sources:—

Capital invested in the business,				(1850)	$543,650
Value of raw material used,				"	$1,627,716
Average monthly cost of male labor,				"	$75,619
Average monthly cost of female labor,				"	$37,759
Males employed,	(1837)	2,631,	(1845)	2,719, "	3,779
Females employed,	"	2,554,	"	3,209, "	6,412
Pairs boots and shoes,	"	2,546,149,	"	2,406,722, "	4,571,400
Value of the articles,	"	$1,689,793,	"	$1,468,000, "	$3,421,300

This is equal to an annual supply of 1 pair each to one-third of all the females in the United States.

The manner in which the manufacture of shoes is carried on in this town is generally well understood. It may not, however, be inconsistent with our present purpose again to allude to it. It requires, on the average, about 60 days to convert stock into articles ready for final sale; and, in the process, several classes of persons are employed. The head manufacturers furnish the capital, and superintend the whole operation. The warehouses or stores of the better class generally contain—1. A counting-room, where the general business is transacted; 2. A leather room, for keeping the soling leather; 3. An upper stock room; 4. Two "clickers'" or cutters' rooms, one for the upper, and one for the "stuffs" or soles; 5. The bound shoe room; 6. The trimming room; 7. The sales and packing room. A last room, and others of less importance, are also sometimes provided. The stock is put into the hands of the clickers, who cut it into "sets" of shoes,

varying somewhat in number and size, from 28 to 50, No. 2 to 7, according to the size and quality of the stock. These sets are numbered, recorded, and packed in boxes, to be sent to the operatives or workmen, to whom they are charged. When returned, they are credited, and go into the trimming room, where they are finally prepared, by females, for market. They are afterwards taken to the sales room, and packed. Generally, the sets, as they go from the cutter, are kept together until their final sale. These shoes are sold at the warehouses of the manufacturers, and are seldom or never consigned.

The "closing" and binding of the shoes is done by females, or "binders"; and the other parts, or "bottoming," by males, or "workmen," "jours," or journeymen. These operatives do not live in Lynn exclusively, but many of them reside in other parts of this State, and in Maine, New Hampshire, and Vermont. The binders receive from 2 to 5 cents per pair for children's shoes, 3 to 5 for misses', 3 to 9 for ladies' shoes, and 6 to 12 for gaiter boots. The workmen receive, for bottoming or making shoes, 5 to 17 cents for children's, 10 to 20 for misses', 10 to 25 for ladies', and 15 to 33 for gaiter boots. All the labor is paid for by the piece. Idle time, here, receives no compensation; and none need be spent. Full employment can always be obtained by competent workmen. The binders earn from $3 to $4, and the workmen from $3 to $9, per week, according to inclination, ability, and time employed, (the latter averaging about $5,) out of which they pay their board,—which in Lynn, is $2 to $2½ for males, and $1¼ to $1¾ for females. The net earnings of the females are about half as great as those of the males. The females seldom bottom the shoes, though they might very properly do it.

Some of the workmen manufacture small lots of shoes on their own account, which they sell to other manufacturers or dealers. Many of them live in their own dwelling-houses, which cost from $500 to $1200. They generally have shops, in which they let to other workmen or journeymen, "berths," or the right to place and use their "kits." These shops are commonly small buildings in a yard near the dwelling house, or rooms in the barns. The price paid for a berth is $1 50, $3 00, and sometimes $5 00, annually, according to accommodations; the inmates agreeing to share equally in the expenses of warming the rooms. The chips of their work are saved when fuel is not needed, and burned with wood, in box stoves, open at top, when it is needed; and, in many shops, these chips supply nearly half the fuel. Very little coal is burned.

The occupation of the shoemaker has been considered not so conducive to health as some others. The Report of the Sanitary Commission (p. 87) states the average ages at which persons of different occupations have died in this State, derived from the registration reports. That of farmers is 64.89 years, and that of shoemakers, 43.41 years; showing a difference of 21.48 years, or nearly 50 per cent., in favor of the former. Mr. Lewis, in his History of Lynn, (p. 263,) remarks: "Of 316 persons whose deaths were noticed, in the First Parish, for about twenty years previous to 1824, 112 were the subjects of consumption; and, in some years since, more than half the deaths have been occasioned by that insidious disease." And he at-

tributes this mortality partly to the occupations of the people. Shoe making is not necessarily unhealthy. It is the improper manner in which it is pursued that makes it so. Public attention has been called to the subject of bettering the condition of these workmen, and great improvements have in recent years been introduced; but, since they constitute so large a portion of our population, it may not be out of place again to refer to some of the sanitary evils which still exist. If by doing it we can stay the hand of death, and prevent the introduction of sickness and suffering to some domestic firesides, we may not render an entirely useless service.

We have surveyed some of the shops of the workmen. One, measuring 10 by 14 feet, and 6 feet high, was occupied by eight men; another, 8 by 10, and 7 feet high, was occupied sometimes by 6, and sometimes by 7 men; and another, 8 by 8, and 6 feet high, was occupied by 4 men; and none of these shops had any means of ventilation. These shops are usually heated to a high temperature, and partly by leather fuel. Sometimes they are filled with the gas produced by the burning of oil lamps; in some, more than one for each person; and sometimes, too, the air is vitiated by the fumes of tobacco, either smoked or chewed; to all which, in some cases, (and thanks to the Washingtonian temperance movement, it is to be hoped they are rare,) there is superadded air that has passed into and out of the lungs of the intemperate. In such shops the workmen labor, constantly inhaling the contaminated atmosphere, often after it has been combined with these various elements of corruption, and becomes tainted, poisoned, and unfit for the proper sustenance of life. And from this atmosphere they frequently pass out into another, of the opposite extreme of temperature, unprepared for the shock which the great change produces.

More rational ideas are beginning to be entertained, and a better class of shops has recently been erected; and probably they now compose a large majority in the town; but these great sanitary evils still exist to a considerable extent, and form a prolific cause of disease. Consumption, and other diseases of the lungs—dyspepsia, and other diseases of the bowels—find their origin in the heated, stagnant, and corrupted air of these unventilated shops. It is attributable to these causes, more than to any others, that the shoemakers so often exclaim, "My hands are unsteady to-day," that they cease to work, and that they are so often feeble and debilitated, and grow prematurely old.

These causes, however, are within the control of the workmen themselves, and *may be removed*. And it is for their pecuniary as well as sanitary welfare that they should know it. It is, indeed, poor economy to purchase a berth for $1 50, or even to occupy one free of cost, with the *privilege* of breathing an atmosphere such as we have described, when a good one, for twice or thrice that sum, can be obtained. The one lessens, and the other increases, the amount and productive power and value of labor. It has been asserted, on the authority of long experience and careful observation, that the aggregate productive capacity of the shoemakers might be doubled; and, in doing it, a healthier, a longer, and a happier life would be ensured.

8. The *house accommodation* in this town, according to the subjoined statement, compiled from the assessors' returns, is increasing; but it is still less than the average for the whole State. It appears to have been

9 persons to each house in 1840, and 8.1 in 1850. In the whole State it was 7.6 persons in 1840, and 7.4 in 1850. The number of tenements returned in the census of the United States, this year, is 1,948, and the number of families 3,800, or nearly 2, on the average, to each tenement; and more than two to each dwelling-house, according to the assessors' returns. According to this statement, the families have the small average of 3.8 persons to each. Additional house accommodation is needed in Lynn.

Period.	Population.	Dwelling Houses.	Shops.	Barns.	Other Buildings.	Total.	Persons to 1 Dw. House.
1800,	2,837	211	113	154	27	505	13.4
1810,	4,087	450	169	309	150	1,078	9.0
1820,	4,515	450	151	204	100	905	10.0
1830,	6,133	561	209	265	74	1,109	10.9
1840,	9,367	1,037	144	336	295	1,812	9.0
1850,	14,257	1,744	543	594	302	3,183	8.1

The houses recently erected have been on an improved plan of construction. An older style of one-and-half-story houses, has prevailed here to a greater extent than is usual in other towns. A large portion of them have small yards and gardens attached, which is an excellent appurtenance; but, generally, they seem to be constructed without much regard to correct architectural taste, or good sanitary economy. Many of the new cottages and other houses of the more wealthy, and of the laboring classes, show that good principles are becoming better understood, and more properly applied.

It is not necessary, for the accommodation of our mechanics, that their dwellings and workshops should be in the immediate neighborhood of the manufacturers for whom they work; but they might be at a distance, and might be located on the unoccupied lands of the town. And a suggestion for an improved class of houses has occurred to us, which we throw out for consideration. It is this: that a tier of building lots, of an eighth or a quarter of an acre each, be laid out; that five houses on each side of a central lot, on an approved sanitary plan, be erected; and that on this central lot a workshop of an improved construction be built, combining conveniences for light, heat, air, ventilation, and all desirable arrangements, and of sufficient size to accommodate twenty persons, or such other number as may occupy the ten dwelling-houses on either side. It is supposed that a dwelling-house of this description might be erected for $500 to $750, and a workshop for $250; and that such houses would readily rent for $40 to $70 each, or for 8 per cent. on the investment. At the same time, they would confer a great pecuniary and sanitary benefit upon the occupants. A similar plan, for improving the dwellings of the laboring classes, has recently been recommended by an eminent sanitary reformer, in Paris, in preference to those connected in blocks.

9. The *property* of the town has been gradually increasing; and, according to the following statement, compiled from the assessors' books, in which it is estimated at its cash value, it has more than doubled within the last five years. During the last year, it has increased $643,235, or 15 per cent.

Years.	Aggregate Valuation of the Property.			Number of Ratable Polls.	Amount of Taxes assessed.	Proportion for each.		
	Real.	Personal.	Total.			$100.	Poll.	Inhab't.
1845,	1,345,134	$668,503	$2,013,637	2,457	$20,913 76	$0 88	$8 51	$1 81
1847,	2,449,587	1,150,002	3,599,589	2,469	31,803 66	0 78	12 88	1 81
1849,	2,838,423	1,353,185	4,191,608	2,809	34,392 32	0 72	12 24	2 72
1850,	3,160,515	1,674,328	4,834,843	3,251	48,521 68	0 90	14 92	3 40

The poll tax in 1845 was $1 30; now, $1 50. The public taxes seem to have increased faster than the population or property. In 1848, 44 persons paid over $100 tax; 19 over $200; 3 over $300; 2 over $400; and 1 over $700. In 1849, 37 persons paid over $100; 16 over $200; 4 over $300; 1, $500; and 1, $1,476. In 1850, 67 persons paid over $100; 25 over $200; 13 over $300; 6 over $400; 2 over $600; and 1, $814 38.

10. The *income and expenditures* of the town, and the objects for which these taxes were imposed, appear from the following statement:

	For 1848.	For 1849.	For 1850.
INCOME.			
From Taxes,	$29,008 90	$30,497 43	$32,047 45
State School Fund,	516 86	527 76	497 12
Rents,	6 00	74 00	51 00
Licenses,	35 00	48 00	32 00
Loans,	3,065 81	14,272 41	9,921 41
Total,	$32,632 57	$45,419 60	$42,548 98
EXPENDITURES.[1]			
For Schoolhouses,	$3,617 14	$15,497 69	$10,495 02
Schools,	9,247 34	11,230 32	12,022 35
Highways & Bridges,	3,115 81	5,398 15	5,456 83
Salaries and Services,	616 44	1,749 51	1,739 76
Fire Department,	2,600 25	1,339 71	847 75
Police,	260 91	169 45	249 00
Pauperism,	3,320 00	4,421 62	4,677 72
Health,			343 80
Contingent,	5,922 80	1,464 00	2,100 80
County Tax,	1,570 08	1,570 80	1,570 80
Int'st on Town Debt,	2,361 80	2,578 35	3,045 15
Total,	$32,632 57	$45,419 60	$42,548 98
Net balance of the town debt,		$46,705 72	$56,960 55

[1] Wm. Bassett, Esq., the present able city clerk of Lynn, has introduced a new, simple, and comprehensive method of keeping an account of the expenditures, by which the different items may be classified, and hereafter and at any time stated, with ease and exactness. The plan is a modification of one in use at Salem, and so favorably commends itself to general adoption by other towns, that we deem it proper to allude to it in this connection. Different books are prepared for each of four departments of the city government, in which are entered, in separate columns, specially ruled for the object, under appropriate headings, every bill for which an order is drawn on the treasury. The headings of the books of the several departments are as follows:—

I. *Mayor's and Aldermen's Department.*—Column 1. Date of order; 2. Name of claim-

These burdens of taxation are rather heavy; more so than in many towns; but the tax-payers have the satisfaction of knowing that more than half the expenditures, for the last two years, have been made for the intellectual elevation of that class of persons in whose keeping the future destinies of the city are soon to be placed.

Lynn has two banks; one having a capital of $90,750, and the other of $150,000; and a Savings Bank, containing $81,100 89, received from 789 depositors.

11. The *losses of property by fire* continue to be very small. The Mutual Fire Insurance Office, of about $1,000,000 insured, lost within the last three years $790 06 only. The total loss by fire, during this period, is estimated at $5,000, or an annual average of $1,666.

12. The *intellectual education* of the children of Lynn is provided for with a liberal hand. In the year ending March 1, 1849, $26,728 01, or 58 per cent. of the whole public expenditure, was for schools and schoolhouses; and, in 1850, $22,517 37, or 52 per cent., was paid for the same object! The system of public instruction is a good one; and consists of Primary schools, Intermediate schools, Principal schools, and a High school, into which the children are admitted and advanced from a lower to a higher grade of schools, according to capacity. The High school is for the whole town. Each district or ward, has one Principal school. Wards 1, 2, 4, and 5, have each one Intermediate school; and Ward 6, has 2 such schools. Wards 1, 2, and 3, have each one Primary school; Wards 2, 4, and 5, have each 4; and Ward 6, 3 such schools. The following general view of the schools, is compiled from the returns to the Board of Education:—

	In 1840.	In 1845.	In 1850.
Children at the educational age, - -	2,451	2,720	2,794
Number of Public schools, - - -	16	22	34
Scholars at school in summer, - -	1,606	2,278	2,890
Average attendance, - - - - -	963	1,306	2,124
Money raised for schools, - - - -	$5,000	$6,000	$12,772
Average for each child, - - - -	-	2.21	4,315
School rank of town in State, - -	168th	142d	51st
School rank of town in county, -	13th	15th	4th

ant; 3. No. of order; 4. Repairs of streets, &c.; 5. Laying out streets; 6. Repairs of city buildings; 7. Health department; 8. Printing and stationery; 9. Constables and police; 10. House of Correction; 11. Lunatic Hospital; 12. Salaries of city officers; 13. Special appropriations; 14. Incidental; 15. Interest; 16. Total; 17. Remarks;—occupying 2 folio post pages.

II. *School Department.*—Column 1. Date of order; 2. Name of claimant; 3. No. of order; 4. Salaries; 5. Committee's services; 6. Repairs; 7. Rents; 8. Care of houses; 9. Books; 10. Printing and stationery; 11. Special appropriations; 12. Incidental; 13. Total; 14. Remarks;—occupying two folio post pages. This form would be improved by adding a column for each school in the town, that the average expense of educating a child therein might be ascertained.

III. *Fire Department.*—Column 1. Date of order; 2. Name of claimant; 3. No. of order; 4 to 13. Each of the 9 engine companies; 14 and 15. Each of the hook and ladder companies; 16. General expenses; 17. Poll tax remitted; 18. Special appropriations; 19. Total; 20. Remarks;—occupying 2 folio post pages.

IV. *Poor Department.—Almshouse:*—Column 1. Date of order; 2. Name of claimant; 3. No. of order; 4. Furniture; 5. Clothing and bedding; 6. Groceries; 7. Bread and breadstuff; 8 Wood; 9. Coal; 10. Meat; 11. Fish; 12. Funeral expenses; 13. Labor; 14. Housekeeping articles and expenses; 15. Incidental; 16. Special appropriations; 17. Total; 18. Remarks.—*Out-door Relief:*—Column 1. Date of order; 2. Name of claimant:—3. No. of order; 4. Store supplies; 5. Fuel; 6. Cash; 7. Funerals; 8. Paid other towns; *Farm:* 9. Labor; 10. Grain; 11. Carts and tools; 12. Live stock; 13. Incidental:—*General:* 14. Salaries; 15. Repairs on buildings; 16. Special and incidental:—17. Total; 18. Remarks;—occupying 4 pages folio post.

The following are the details of the schools in the several wards, for the last year :—

Wards.	Schools.	Teachers.			Scholars.	Attendance.	Expenses.	For each Scholar.
1,	3	M. 1	F.	2	181	170	$928 22	$5 12
2,	6	" 1	"	7	423	345	1,966 15	4 64
3,	2	" 1	"	1	141	116	696 72	4 94
4,	6	" 1	"	6	464	359	2,003 99	4 53
5,	6	" 1	"	8	482	414	2,144 11	4 44
6,	7	" 1	"	9	582	474	2,536 72	4 35
7,	1	" 1	"	-	66	50	491 30	7 44
8,	1	" 1	"	-	49	34	411 85	8 40
9,	1	" 1	"	-	66	40	542 73	8 22
Total,	33	9		33	2,454	2,002	$11,721 79	$4 36

The High school which has been recently established, and is not included in the above statement, is attended by 78 scholars. The 33 other schools have 42 teachers, 9 males and 33 females; and the average cost of educating each scholar in the town, without estimating the cost and repairs of schoolhouses and some other matters, is $4.36. It would be interesting to keep an exact account of each school, to show the comparative expenses from year to year.

The School Committee, in their able report, have again called attention to the sanitary condition of our schoolhouses. They state that a Primary school in Ward 2, having an average of 48 and an attendance of 40 scholars, is kept in a room 24 feet by 16, and 8½ feet in height, the whole room measuring only 3,624 cubic feet, or 90.6 to each scholar. An adequate supply of air for each person, is supposed to be about 10 cubic feet per minute. Hence the whole air of the room, unless renewed by fresh supplies, entering through the doors, windows, or otherwise, becomes tainted with poisonous gases from the lungs, and is rendered unfit for use in less than ten minutes! And some other schoolhouses are in a condition nearly as bad. It is in badly located and inadequately constructed schoolhouses, that many and many a person is debilitated and prepared for the easy invasion of disease. The lives of many children are sacrificed every year to the insatiable scarlatina, or to some other disease, by those who have considered such sacrifices inevitable, while in truth, they are the result, not of inevitable, but of controllable and removable causes. If persons have not lost the vital power of resisting disease by transgressions of some of the laws of health, the preservation of their lives may not only be possible, but probable. We are pleased to know that our worthy mayor has felt the force of these sanitary evils, and has presented them to the consideration of the city council.

It may be proper to mention, as an additional means of education, that two weekly newspapers are published in the city, one having a circulation of 750, and the other of 1,150 copies. There are also a social and a circulating library, of 1,500 volumes each. There are 8 school libraries, containing 2,450 volumes, or 316 each. A lyceum, at which lectures are delivered, weekly; and various other social, charitable, and religious societies, exist in the town.

13. The *religious opinions* of the people, and the religious influences exerted for their improvement and welfare, may be inferred from the following statement. It appears that 1 society of Baptists, 1 of Christians, 1 of Episcopalians, 4 of Methodists, 4 of Orthodox Congregationalists, 1 of Unitarians, 2 of Universalists, 1 of Friends, and 1 of Roman Catholics, exist in the town. Their aggregate church property has been estimated at 124,000; the accommodations or sittings they furnish, at 8,000; the annual expenses of public worship, at $12,000; and the number of communicants in the churches, at 1,500. This must be considered only as an approximation to the exact truth; but allowing it to be sufficiently accurate for a basis of calculation, it shows that about two-thirds of the people can be accommodated at places of public worship. A little less than $1.00 annually, for each inhabitant, is paid for the annual expenses; and about 1 inhabitant in 10 is a communicant.

This estimate of the voluntary payments for the support of public worship, is exclusive of the expenses and personal labors in the maintenance of flourishing Sabbath schools; and of the streams that are constantly flowing for objects of charity and philanthropy, at home and abroad.

14. *Pauperism* seems to be on the decline. In 1840 there were 80 in-door, and 200 out-door paupers; and the whole annual cost of their support was $4,000. For the last year there have been 45 in-door, (15 natives and 30 foreigners,) and 240 out-door paupers, and the whole cost of their support was $4,677.72. In 1840 there was 1 in-door pauper to 117 inhabitants; in the last year only 1 to 317 inhabitants—a very gratifying indication of improvement and prosperity.

15. *Crime* can now be exhibited from year to year, by the records of the police court, to show the moral movements and progress of the people, and their comparative moral elevation. For the year ending July 1, 1850, it appears that 170 suits were entered in the police court, of which 118 resulted in convictions:—18 were for assault and battery; 6 for larceny; 1 for shop-breaking; 1 for riot; 19 for disorderly conduct in the streets; 1 for malicious mischief; 1 for being a vagabond; 1 for cruelty to beasts; 2 for lascivious cohabitation; 1 for being a stubborn child; 42 for being common drunkards; 11 for being drunk; and 13 for violating the license law. This is 1 conviction to about 127 of the inhabitants; but they were mostly for comparatively small crimes. The statement is highly favorable to the morality of the town.

17. Until within this year Lynn has had but three different grounds for the burial of the dead, which, together, measure less than 5 acres. During the year 1849, there were 143 interments in the "Western" burial ground; 123 in the "Eastern;" 10 in the "Friends';" and 12 in the "Dissenters';" total, 288; besides still-born infants, which were not entered upon the records. The condition of these grounds is thus described:—"It will be seen that nearly half of these burials were made in the two acres at the west end of the Common, which has been used by most of the population, for this purpose, two hundred and twenty years. The condition of this ground may be imagined, but cannot be described without the use of terms that would shock the sensibility of a large number of families who have a mournful interest in the place

and its associations. It is conceded by all that the location is unsuitable, and that further burials there ought to be discontinued. The ground is damp—the coffins in the tombs and graves soon decay—the vampyre of disease and death hovers around its sombre shades.

"The location of the other three burial grounds is also highly objectionable, as they are situated in the midst of the population. A proper regard for the public health requires that no more burials should be made in them."

Many of our fellow-citizens have long desired that additional burial accommodations should be provided. And after a series of preliminary measures, on the 22d October, 1849, an association, by the name of the "Pine Grove Cemetery Corporation," was organized, under the general laws of the State, for the purpose of establishing a new cemetery. A lot of ground, containing about 24 acres, was purchased, at a cost of $1,800; and it was consecrated, as a place for the interment of the dead, on the 24th of July, 1850. Mrs. Stocker was the first person buried, and she was interred October 13, 1850. The price of a burial lot, of 300 square feet, is fixed at $15. The first Annual Report was made January 7, 1850, and contains the paragraphs above quoted, and the following description of the ground:—"It is well wooded with white and pitch pines, interspersed with oaks, cedars, and other trees. At the southern extremity is a beautiful hill, covered with trees, and presenting several fine vistas. Near the centre is 'Forest Rock,' about twenty feet higher than 'Lover's Leap,' which commands an extensive view of the town and ocean, the islands of Boston Harbor, and a distant prospect of the Blue Hills. This eminence falls off, in an easy slope, into a variety of moderate swells, level plats, and graceful valleys; affording a fine exercise for taste and judgment to construct avenues and pathways, along which the eye may be gratified with a great variety of woodland scenery, and an equal diversity in the selection of spots suitable for placing the monumental marble. In romantic scenery, poetic beauty, and peaceful seclusion,—three things particularly desirable in a burial place,"—the Pine Grove Cemetery "is not exceeded by any place which we have examined. The location may be regarded as sufficiently convenient for any part of the town. The entrance will be on Boston street, about a furlong from the bridge in Franklin street. The distance from Lynn Hotel is two hundred and eighty rods; from Lyceum Hall, two hundred and eighty-eight rods; from Gravesend, two hundred and eighty-six rods; from the Dye-house, two hundred and eighty rods; from the Lynn Depot, one mile; and from Saugus Bridge and Swamscot, two miles each."

3. *Movements or Changes of the Population.*

During the past year the changes in our population, produced by the occurrence of the three great events of life, the births, marriages, and deaths, have been great. A large amount of life has been created; and circumstances presently to be noticed, have occurred by which an amount larger than usual has been destroyed. These changes are constantly going on, and are more frequent and greater in the aggregate, than is commonly supposed. On the average, more than one human being has come into existence in this town, for every day during the year; and more than one has gone out of it for every two

days. We proceed to notice, more in detail, these great measurers of human progress; and that a comparison may be drawn between different periods, we present similar facts for the previous year—1848. An abstract of the returns to the State, for 1842–1848, as they appear in the registration reports, is subjoined. They are, however, too imperfect for a basis of correct deductions :—

	1842.	1843.	1844.	1845.	1846.	1847.	1848.
Births, . .	40	41	.	296	335	306	259
Marriages, .	58	29	.	90	94	63	110
Deaths, . .	74	116	.	200	206	225	173

The number of births entered and the sexes of the children born, for the whole of the last two years, exhibit the following singular results :—

1848,	Males, 196	Females, 210	Total, 406
1849,	" 210	" 196	" 406

showing the same number of births in each year; and by reversing the difference between the sexes, the same number of each sex in both years. Allowing this to be the exact number of births in town, and that our population was 12,500 on the average, for the two years, it shows the births to have been nearly 3.25 per cent., or 1 in 3 of the population. Among the births were 7 pairs of twins, in 1848; and 3 pairs, in 1849.

The number of *marriages* recorded in 1848, was 109, or 1 in 115 of the population; and in 1849, it was 129, or 1 in 100. These proportions are unusually large, and indicate a favorable state of prosperity. The residences of the parties at the time of marriage, and other facts, are shown in the following abstract :—

	1848.	1849.
Both parties were residents of Lynn, in . .	69 cases,	109 cases.
The man a resident, and the woman a non-resident, in	5 "	3 "
The woman a resident, and the man a non-resident, in	7 "	14 "
Neither party was a resident, in . . .	8 "	3 "
The residence of the man was not stated, in .	8 "	.
The residence of the woman was not stated, in	4 "	.
The residence of neither party was stated, in	8 "	.
Total marriages, ...	109 "	129 "
Both parties were married for the first time, in . .		110 cases.
The man was married the first time, and the woman the second time, in		2 "
The woman was married the first, and the man the second time, in		8 "
Both parties had been married before, in . . .		8 "
Not stated as to either, in		1 "

In 3 cases the man was married for the third time, and in 1, for the fourth time. In no case was the woman married more than for the second time.

	1848.	1849.
The ages of both parties are given, in . .	66 cases.	96 cases.
The ages of one only, or neither was given, in	35 "	33 "
The average age of the men, at all marriages, was	28 years.	27 years.
The average age of the women, at all marriages, was	24 "	24 "
Men whose ages were known at first marriage,	36 cases.	108 cases.
Their average ages were . . .	24 years.	25 years.
Men whose ages were known at subsequent marriages, ...	5 cases.	14 cases.
Their average ages were . . .	55 years.	44 years.
Women whose ages were known at first marriage, ...	38 cases.	104 cases.
Their average ages were . . .	24 years.	21 years.
Women whose ages were known at subsequent marriages, ...	3 cases.	10 cases.
Their averages were	27 years.	41 years.
The age of the youngest man at marriage, was	18 "	19 "
" " of the youngest woman at " "	16 "	15 "
" " of the oldest man at " "	66 "	72 "
" " of the oldest woman at " "	59 "	54 "

These marriages were solemnized by 32 different persons, 6 of whom were justices of the peace. One clergyman performed the ceremony in 40 cases; 1 in 22; 1 in 21; 1 in 16; 1 in 13; and others in a less number. In 3 cases the clergyman was not a resident.

The number of *deaths recorded*, and the sexes of the persons who died, are as follows:—

1848,	Males, 129	Females, 181	Total, 310
1849,	" 146	" 142	" 288

This exhibits a mortality of about 2.39 per cent., or 1 in 41 of the population. This is a large excess above the usual mortality. There is, however, even in this year, a large excess of births over the deaths. In years of ordinary health it is supposed that the number of births is nearly double that of the deaths. The number and average ages of those whose ages were known, were as follows:—

307 in 1848, aggregate ages, 7,230 yrs. 7 m. 16 d. Av. age, 23 yrs. 6 m. 18 d.
287 in 1849, " " 6,235 " 3 " 24 " " 21 " 8 " 28 "

		Under 5.	5 to 15.	15 to 60.	Over 60.	Total.
1848,	Males, . .	59	14	40	16	129
	Females, .	72	18	63	28	181
	Both, . .	131	32	103	44	310
1849,	Males . .	71	16	39	20	146
	Females, .	64	11	50	17	142
	Both, . .	135	27	89	37	288

		Winter.	Spring.	Summer.	Autumn.	Year.
1848,	Males, . .	24	17	70	18	129
	Females, .	26	27	89	39	181
	Both, . .	50	44	159	57	310

		Under 5.	5 to 15.	15 to 60.	Over 60.	Total.
1849,	Males, . .	37	34	53	22	146
	Females, .	38	36	47	21	142
	Both, . .	75	70	100	43	288

The diseases and causes of death, classified as recommended in the Sanitary Report, (pp. 149, 393,) were as follows:—

	1848.	1849.
1. *Zymotic Diseases.*		
Cholera, (Asiatic,) . .		16
Cholera Infantum, .	10	4
Croup, . . .	3	3
Dysentery, . .	117	21
Erysipelas, . .	1	1
Fever, Intermittent, . .		1
" Remittent, . .		1
" Typhus, . .	10	7
Hooping Cough, .	1	3
Measles, . . .		1
Scarlatina, . . .	6	71
Small-pox, . . .		1
Total, . . .	148	130
2. *Diseases of Uncertain Seat.*		
Abscess, . . .		1
Cancer, . . .	2	1
Debility, . . .	3	.
Dropsy, . . .	8	8
Infantile Diseases, .	9	11
Inflammation, . .	1	4
Scrofula, . . .	2	1
Total, . . .	25	26
3. *Diseases of the Nervous Organs.*		
Convulsions, . .	4	5
Hydrocephalus, . .	1	4
Insanity, . . .	2	.
Paralysis, . . .	1	2
Brain, Disease of, .	6	5
Total, . . .	14	16
4. *Diseases of Circulative Organs.*		
Heart, Disease of, .	5	5

	1848.	1849.
5. *Diseases of the Respiratory Organs.*		
Consumption, . .	64	49
Pnuemonia, . .	8	14
Total, . . .	72	63
6. *Diseases of the Digestive Organs.*		
Bowels, Disease of, .	12	7
Gastritis, . . .	1	2
Quinsy, . . .	1	.
Teething, . . .	1	5
Ulceration, . .	7	.
Worms, . . .	1	2
Total, . . .	23	16
7. *Diseases of the Urinative Organs.*		
Gravel, ...		1
8. *Diseases of the Generative Organs.*		
Child-birth, . .	2	3
9. *Old Age*, . .	9	14
10. *External Causes.*		
Accidents, . . .	2	3
Drowning, . . .		2
Heat, ...		1
Intemperance, . .		2
Suffocation, . .	1	1
Suicide, . . .		2
Total, . . .	3	11
11. *Unknown Causes*, .	9	3
Total, . . .	310	288

It will be perceived, from the above statement, that the zymotic, or epidemic, endemic, and contagious diseases, prevailed here to a large extent, during both years. They produced 148 deaths, or 47.74 per cent. of the whole mortality, in 1848; and 130 deaths, or 45.14 per cent., in 1849. Of the different diseases of this class, cholera, dysentery, and scarlatina, to be noticed farther on, have produced the greatest number of deaths. Typhus, or typhoid fever, produced 10 deaths in 1848, and 7 in 1849; and some of the cases were plainly

traceable to filth, or some other local causes. Croup produced the same number of deaths in each year, which is a small proportion ; and it is said that this disease is less common in Lynn than in many other places. Whether it be so, can be determined only by a series of exact observations, made through several years.

In 1848, an epidemic dysentery, of a peculiarly malignant type, such as had not been known here for many years, appeared in Ward 2, in the northeasterly part of the town—a section commonly known as Wood End. The infected district has an area of about one square mile, and then contained a population not exceeding 2,000—principally shoemakers. It has on its southeasterly border the ocean, and on its westerly border High Rock Hill, which, from an elevation of 170 feet, slopes northerly until it terminates in Fresh Marsh, or Reedy Meadow, by the side of which the road passes to Graves End. Through this meadow flows a small stream, known as Stacy's Brook. This district contains two small ponds of stagnant water; one northerly, and the other near the centre. It also contains the Eastern Burial Ground. It is rather more elevated than many parts of the town, and is usually a healthy locality.

The first case of the disease occurred on the 28th of July, in the house on the northerly corner of Olive and Chesnut streets, and resulted in recovery. Other persons were soon after attacked, and the epidemic spread with great rapidity throughout the section. A large portion of the inhabitants were more or less affected—some with greater severity than others. It was confined to no class ; males and females, the apparently healthy and invalids, were indiscriminately attacked. The mortality was greatest, however, among children. The disease usually commenced with pains in the lower region of the bowels, near the rectum ; and, in the progress of the fatal cases, produced nausea and vomiting, mucus and bloody evacuations, which were succeeded by ulceration, mortification, and death. Remedies seemed to have little or no effect. Generally the disease went on, from its commencement to its termination, uncontrolled by the best medical skill. Sometimes, death was produced in a few hours ; sometimes, in a few days, or a few weeks.

The town records contain entries of 117 deaths by dysentery, in 1848, of which seven-eighths were supposed to be in this section. Some bad cases occurred on High Rock Hill, in Broad street, and Nahant street, near the beach ; and at the extreme east end, known as "The Farms." The other parts of the town, and Swamscot, were generally free from the disease. One person died in May, 1 in July, 44 in August, 60 in September, 9 in October, 1 in November, and 1 in December ; 51 were males, and 66 females. Under 5 years of age, 66 died ; 5 to 10, 11 ; 10 to 15, 2 ; 15 to 20, 1 ; 20 to 30, 7 ; 30 to 40, 3 ; 40 to 50, 7 ; 50 to 60, 10 ; 60 to 70, 3 ; and 70 to 80, 2. Estimating that there were 100 deaths in this 2,000 population, which is supposed to be nearly correct, the mortality, in the three months, was 5 per cent., or 1 in 20 of the inhabitants !

This terrible epidemic had a cause ; but what that cause *was*, has never been satisfactorily ascertained. Some have suggested that it might have been the exhalations from Fresh Meadow or from the stagnant waters in the neighborhood, or some peculiar condition of

the burying ground or the well water; but others deem it unjust to charge either of these localities, or the wells, with so great a calamity, when they had not previously been known to be obnoxious to such a charge. It is possible, however, that there *might* have been some peculiarity in the waters of the meadow, or in the places in it from which "peat" had been taken, or in the vegetation, or in something else, which, by being combined with the peculiar state of the air, might, at that but never at any other time, have been the source from which the poison was exhaled. The season was very hot and dry, and an epidemic constitution of the atmosphere generally prevailed. Were such exhalations produced, it is very natural that they should be carried, in the currents of the atmosphere, from this locality to that upon which they fell. And it is a remarkable fact, that in Graves End, on the other side of the meadow, not a single death occurred. Until observations concerning the atmospheric, local, and personal causes of epidemic diseases, are made with more exactness, and in greater numbers, it is impossible to determine their true nature and history. No such observations concerning this epidemic were made at the time; and its causes will probably remain in obscurity, and never be definitely known.

On the subsidence of the dysentery above described, scarlatina assumed an epidemic form, and prevailed during nearly the whole of the year 1849; sometimes with great malignity, and producing death in 24 hours after an attack. It was diffused through the whole town, but prevailed more in some localities than in others. During the year, 71 died—35 males, and 36 females; of whom 50—23 males, and 27 females—were under 5; 16—10 males, and 6 females—were between 5 and 10; 2 males and 1 female, 10 to 15; 1 male, 15 to 20; and 1 female, between 50 and 60. Nine died in January, 5 in February, 8 in March, 10 in April, 13 in May, 8 in June, 1 in July, 1 in August, 2 in September, 5 in November, and 3 in December.

On the 10th of August, an Irish emigrant, who had recently arrived, destitute and of filthy and intemperate habits, was found in one of the worst habitations of the town, and admitted into the almshouse. He was suffering from what was supposed to be a severe cholera morbus, but which subsequently proved to be the *Asiatic Cholera*. He died two days afterwards. He occupied a room with a person ill with a tumor, which emitted offensive odors. On the next day, two other male inmates, aged forty and forty-five years, both dissipated, were attacked; one died in 6 hours, and the other in 4 days. On the same day, a female, aged 85, died in 24 hours after attack; and the next day, the female who laid her out—the worthy sister of the matron—was attacked, and died in 36 hours. The alarm now became very great.

The almshouse is situated in the westerly part of the town, half a mile from the marsh, on land elevated 80 to 100 feet above tide water, in what has been considered a healthy location. It has generally been kept in good order, though it was not provided with means of ventilation, and was too much crowded. Rooms are provided in it for the temporary confinement of persons convicted of minor offences before the police court.

It became evident that the poison of the disease, from some cause,

had been attracted to the locality, and had become so concentrated, that few who inhaled its atmosphere had sufficient vitality to resist its influence. As a means of safety, it was determined to remove the inmates to temporary accommodations. This was done under the superintendence of the Board of Health. Every part of the house was thoroughly cleansed and whitewashed; and it was permitted to remain unoccupied for a few weeks. In the mean time, cases of cholera continued to occur, but mostly among those who had been exposed to the atmosphere of the house. A few occurred in other parts of the town.

On the 19th, 2 males died; one, aged 60, of bad habits, died in 12 hours; the other, aged 85, in 24 hours. On the 20th, a boy, 9 years old, died at the almshouse, in 4 days after attack. On the same day, a man of improper habits, aged 45, died in 10 hours after attack. Next, the worthy matron of the establishment fell a victim, after 24 hours' illness. The next case of death was in five hours after attack. It was in "Mulliken's buildings," a damp place, surrounded by filth. The deceased was healthy, and had not been exposed. On the 28th, a female from Boston died at Swamscot, after 3 days' sickness. Next, a male, of dissipated habits, in 24 hours, at the almshouse. A female, aged 40, next died, near Mulliken's buildings, in 18 hours. The last case of death was that of a female from Boston, who died in 8 hours, on the 30th of August.

On the town records, 16 cases of cholera are recorded—9 males, and 7 females; 9 were in the almshouse, and 7 elsewhere; 5 were natives of the town, 1 of Virginia, and 2 of Ireland; and the birthplaces of 8 were not specified.

During 1849, there were recorded 10 deaths by cholera infantum, 21 by dysentery, and some by other diseases, which might, perhaps, have been classed with those of the digestive organs.

Of the sporadic diseases of uncertain seat, those entered under the undefined name of infantile diseases, and dropsy—and, in the 3d class, under convulsions and diseases of the brain, are the most numerous. Diseases of the heart are the only ones mentioned in the 4th class. In the undefined diseases of the bowels, some cases of dysentery or cholera may have been classed; and those here given against ulceration or canker, probably included cases of scarlatina.

Consumption has produced the usual mortality in this town, notwithstanding the number of deaths by zymotic diseases. It destroyed 64 lives in 1848, and 49 in 1849; or an average of 56 in both years. Of these, 28 were males, and 36 females, in 1848; and 17 males, and 32 females, in 1849. Of the 49 cases in 1849, 16—or 4 males, and 12 females—were between 20 and 30 years of age; 8 were under 5; and 5 males were between 50 and 60. 77 occurred in winter, 11 in spring, 13 in summer, and 8 in autumn. This statement shows that there has been, during both these years, 221 probabilities of living without consumption, to 1 of dying by consumption; and that there is twice the liability to this disease here, that there is in Plympton.

In February of this year, the small-pox broke out in a family of colored persons, in a court between Union and Spring streets, in the neighborhood of the Eastern Railroad Station. The first case was that of a colored child, from Boston. It spread into the neighborhood; but, by the great exertions of the Board of Health and others, it was

confined to an area of about half a square mile. About[1] 50 cases, including varioloid, occurred, of which 8 terminated fatally; the first on the 22d of February, and the last on the 22d of April; 5 were males, and 3 were females; 1 was a native of England, 1 of Nova Scotia, 1 of Vermont, and the other 5 of Lynn. *None of them had been vaccinated.* These deaths were consequently a kind of *suicides*, resulting from neglect of preventive remedies.

4. *General considerations, conclusions, and recommendations.*

We have thus passed in review several of the most important matters that have come under notice during the past year. Others, hardly less important, might have been mentioned; and those here presented might profitably have been more fully illustrated and discussed; but our report has already extended to so great a length, that we hasten to its conclusion, and leave many things for consideration and notice in the annual reports of future Boards of Health.

Among the *conclusions* to which we have been led, are these:—

1. That the year 1850 is an important era in the history of the people of Lynn. In it they threw off their old town government, under which they had lived for more than two hundred years, and adopted a city charter. And they are now about to commence upon the last half of the nineteenth century, under circumstances highly favorable to future progress and social elevation.

2. That it is well for us to be informed of our exact social and sanitary condition; and to provide the means of knowing it, from year to year, by annual statements, in order that the changes that take place in our progress may be marked, and that motives and means of improvement may be suggested and supplied.

3. That our experience, during the past year, has demonstrated the utility of a Board of Health, separate from, but acting in concert with, the other departments of the municipal administration. Important services may be rendered by such a board, which might be omitted by the selectmen of a town, or the mayor and aldermen of a city, burdened, as those officers generally are, by various other duties. The intellectual health of the city requires a school committee, as a distinct department of the government; the physical health is not less important, and equally requires a separate department for its preservation.

4. That the records of the births, marriages, and deaths, in Lynn, have not been kept with sufficient exactness, nor for a sufficient length of time, to determine the true sanitary character of the town, nor the rate or law of mortality which prevails. And any attempt to exhibit such a character, or to ascertain the existence of such a law, without full and accurate records, must be unsatisfactory and unreliable.

5. That, though Lynn has been considered a healthy town, it is, like most other towns in the State, liable to be visited by epidemic diseases; —that it has suffered very greatly by these epidemics during the last two years;—and that it may hereafter again suffer, unless correct principles of sanitary reform are introduced, and the causes of disease are more generally understood, and efficient means are adopted for their removal or avoidance.

[1] We have been under the necessity, in this report, of sometimes using the word *about*. We, however, dislike it; and its use is never justifiable when *exactness* can be attained.

6. That the people of Lynn have many characteristics of peculiar excellence. Their mechanical pursuits tend to an equalization of pecuniary condition, and are unfavorable to aristocratic feelings. Their support of institutions for public intellectual education—their remarkable exemption from litigation and crime—their liberal support of moral and religious institutions—and various other peculiarities, distinguish them from the people of many other towns and cities. And among such a people, the true principles of sanitary reform may be introduced with a stronger hope of success, than among those of a different character.

7. That the peculiar occupations of the people are such as require to be guarded and controlled by good sanitary regulations. By neglect of such regulations, many lives every year have been lost, which might have been saved; and this needless sacrifice of human life will continue, until prevented by sanitary reform.

And we *recommend*, for the consideration of our fellow-citizens :—

1. That a copy of the Register of the Population, made by the Assistant Marshal of the United States, in the Census of 1850, be obtained; and, if necessary, corrected in its industrial and social statistics, divided and classified according to the wards, with an alphabetical index for reference to each family, and deposited, in a bound form, in the office of the city clerk.

2. That the laws for the registration of births, marriages, and deaths, be strictly carried into effect; that none of these events be omitted in the records; and that, in the entry of every death, the ward or district in which it occurred, and the occupation of the deceased, should always be specified; that, should it be deemed expedient, comparisons of their sanitary character may hereafter be made.

3. That a Board of Health, appointed and organized as recommended in the Report of the Sanitary Commission, be established.

4. That a voluntary sanitary association be formed, composed of professional men, mechanics, and others, to aid the public authorities, and to collect and diffuse, by lectures, printed tracts, and otherwise, information regarding the sanitary condition of the city, its people, and their occupations; and the means by which human life may be saved, sickness and suffering diminished, and the general welfare promoted.

5. That measures be taken to provide for workmen, dwelling-houses and workshops of an improved construction; and to prevent the sanitary evils that arise from those that are over-crowded, imperfectly ventilated, and badly managed.

6. That exact observations be made of every case of consumption, of dysentery, and of other prevalent diseases, to ascertain their causes, and how far those causes are controllable and removable.

7. That the measures recommended in the Report of the Sanitary Commission, modified and adapted to local circumstances, be adopted, so far as they are applicable, by the inhabitants of this city.

By these and other measures, which wise councils may recommend, and experience and current events may suggest, we may confidently hope to banish from our midst much sanitary suffering, and supply much sanitary enjoyment; and, in doing so, the period of our existence will be extended, the productive power and value of our labor will be increased, our social and personal interests will be promoted, our en-

joyments heightened, and we shall be better prepared to terminate our present life, whenever this life must be terminated—and to enter upon the future, the spiritual, the immortal life, which is to follow.

Respectfully submitted, in behalf of the Board,

X. Y. Z., *Secretary.* A. B. C., *Chairman.*

Lynn, Nov. 1, 1850.

XXVIII. Extract from the Quarterly Return of the Marriages, Births, and Deaths, Registered in the Divisions, Counties, and Districts of England. Published by Authority of the Registrar General.

[Received after the preceding pages were printed.]

This return comprises the births and deaths registered by 2,189 registrars, in all the districts of England, during the summer quarter, ending September 30, 1850; and the marriages in more than 12,000 churches or chapels, 2,869 registered places of worship unconnected with the Established Church, and 623 Superintendent Registrars' offices, in the quarter that ended June 30, 1850.

The return of marriages is not complete; but the defects are inconsiderable, and have been supplied from previous years.

The general result of the return is favorable in a high degree; the marriages in the spring quarter are more numerous than in any corresponding quarter of the last 12 years; so also are the births in the summer quarter; and the deaths are 86,044 instead of 135,358, which they were in the quarter ending September, 1849, when cholera ravaged the chief towns of the kingdom.

The decrease of deaths implies necessarily the decrease of sickness and suffering; the increase of marriages and births indicates improvement in the condition and prospects of the great body of the people.

Marriages, Births, and Deaths, returned in the years 1846–50, *and in the quarters of those years.*

	1846.	1847.	1848.	1849.	1850.
Marriages, . . .	145,664	135,845	138,230	141,599	.
Births, ...	572,625	539,965	563,059	578,087	.
Deaths, ...	390,315	423,304	399,800	441,458	.
MARRIAGES.					
Quarters ending the last day of					
March, ...	31,417	27,480	28,398	28,370	30,425
June, ...	37,111	35,197	34,721	35,908	39,018
September, . . .	35,070	32,439	32,995	33,789	.
December, . . .	42,066	40,729	42,116	43,632	.
BIRTHS.					
March, ...	145,108	146,453	139,736	153,690	144,602
June, ...	149,450	139,072	149,760	153,716	155,727
September, . . .	138,718	127,173	140,359	135,200	146,970
December, . . .	139,349	127,267	133,204	135,481	.

DEATHS.

March, ...	89,484	119,672	120,034	106,073	98,607
June, ...	90,231	106,718	99,727	102,249	93,005
September, . . .	101,663	93,435	87,602	135,358	86,044
December, . . .	108,937	103,479	92,437	97,778	.

Marriages.—The marriages in all England, in the quarter ending June 30, 1850, were 39,018. The numbers in the spring quarter declined rapidly from 1846 to 1848, and rose still more rapidly up to 1850; thus following and pourtraying the state of the country. London, Cheshire, Lancashire, the West Riding of Yorkshire, and South Wales, presented the greatest fluctuations, and the greatest increase of marriages in the June quarter, 1850. The marriages increased in Middlesex, Hertford, and Buckingham; in Essex and Suffolk the marriages declined, as they did also in Devon and Cornwall; in Shropshire, Staffordshire, Worcestershire, and Warwickshire—the coal and iron regions—the marriages increased; they increased also in Leicestershire, Nottinghamshire, and Derbyshire—the seats of the thread, lace, and other manufactures. In the great agricultural county of Lincoln the fluctuation was in an opposite direction; the marriages rose from June, 1846, to June, 1848, and then declined. In the East and North Ridings, in Durham, Northumberland, Cumberland, and Westmoreland, in Monmouthshire, and North Wales, the marriages increased in 1850. The marriages in Portsmouth and Plymouth declined; in Bristol and Cheltenham they increased; in Stoke-upon-Trent, (the Potteries,) in Coventry, and in Birmingham, Liverpool, and Manchester, the increase was considerable. It was still greater in Leeds; Halifax and Sheffield shared in the general advance. Hull, Wolverhampton, and Salisbury—where cholera was exceedingly fatal in 1849—have little more than the average marriages.

Births.—146,970 births were registered in the quarter which ended in September. The births are invariably more numerous in the first and second than in the third and fourth quarters of the year; and they are in the last fewer by 8,757 than in the previous (June) quarter; the number and the proportion to the population are, however, greater in this than in any of the corresponding quarters since 1839. The increase of births is greatest in London, in the West-Midland counties, and in the Northwestern counties—Cheshire and Lancashire.

Increase of Population.—The excess of births registered, over deaths, in the quarter was 60,926; which, if all the births were registered, would be the natural increase of the population. In the same time 53,703 emigrants sailed from three ports of England—1,394 from Plymouth, 7,684 from London, and 44,625 from Liverpool. This leaves a narrow margin for the increase of population; but many of the emigrants entered at the English ports, are from Ireland, which has been for many years diffusing a stream of natives over England as well as America. The progress of the whole fixed and moving population of the country, can only be determined accurately from a comparison of the returns of births and deaths, of emigrants and immigrants, with periodical enumerations.

State of the Public Health.—The mortality is much below the

average, and the public health has never been so good since 1845, as in the present quarter. The rate of mortality is 1.901 per cent. per annum. At this rate 1 in 211 persons living died in three months. The chances of living through this quarter were 210 to 1; the average chances of living through three summer months (1839–50) for persons of all ages, being 192 to 1.

The rate of mortality in 506 districts, comprising chiefly small towns and country parishes, was 1.693 per cent. per annum in the quarter; the average summer rate (1840–50) being 1.832 per cent.

	Estimated Population in the middle of August, 1845.	Deaths in Eleven Summer Quarters, 1840–50.	Annual Rate of Mortality per cent. in the Summers 1840–50.
In 117 Districts, . . .	7,112,200	492,255	2.517
In 506 Districts, . . .	9,567,400	481,986	1.832
Excess of Mortality in Towns,	.	.	0.685

The rate of mortality in 117 districts, comprising the large towns, was 2.206 per cent. per annum; the average rate (1840–50) being 2.517 per cent.

The juxtaposition of the figures in the table suggests the melancholy reflection that more than seven millions of people, inhabiting the metropolis and all the cities and great centres of industry, are still exposed to a mortality which is not inherent in their nature, but is due to the artificial circumstances in which they are placed. The waters, the sewers, the soils, the churchyards, the houses emit poisons. To every 10 natural deaths, 4 violent deaths—deaths from these poisonous exhalations—are superadded.

Still, after the scarcity—after the great epidemics of influenza—and after the catastrophe of last year, the return even to the wonted degree of health is a relief to the nation; and health above the average, not only in places scourged by cholera, but in nearly all the towns of the country, is cheering, as it seems to show at once that the imperfect sanitary measures in progress are already beneficial, that the country is recovering from its loss, and that the wants of the people are now more abundantly supplied than they have been of late years.

The deaths in London during the 13 weeks ending September, 1846–7–8–9–50, were 12,409, 13,187, 13,503, 27,109, and 11,578. The zymotic diseases were fatal to 3,011 persons in the last quarter, and it is chiefly, if not exclusively, to the diminished intensity of these maladies that the improvement in the health of the inhabitants of London is ascribable. Small-pox destroyed 109 lives, measles 178, scarlatina 316, hooping-cough 300, croup 57, thrush 59, diarrhœa 1,161, dysentery, 73, and cholera 87. The deaths from diarrhœa in the same time, last year, were 2,457; the deaths from cholera in the five summer quarters of 1846–50, were 197, 98, 153, 12,847, and 87; so that fewer persons died of the disease in summer, 1850, than in the summer quarters of 1846–7–8. Nine deaths from purpura and scurvy were returned; or less than half the number returned in the summer quarter of 1847. The decrease of scurvy is a favorable symptom; it always demands attention, as nothing is more threatening to the health

of large bodies of people, than a disease which involves the whole fluids of the body, and is the precursor of the most fatal epidemics.

Twenty-six deaths from poison, 26 from burns and scalds, 53 from hanging and suffocation, 94 from drowning, 137 from fractures and contusions, 19 from wounds, and 19 from other violence, were registered. The increase in the deaths from hanging, strangling, and suffocation, is considerable. The increase in the deaths by poison also deserve attention. Some alteration of the law to regulate the sale of poisons seems to be required. Arsenic is tasteless in food; it is inevitably fatal; it can be detected in the body after death; and it can be procured by any person in shops almost as readily as sugar. The placing of the sale of a commodity under restrictions, is attended with difficulties; but to nip in its bud the practice of domestic murder by the administration of a tasteless poison is worth the effort, and will count against much inconvenience.

The deaths in the workhouses, hospitals, and other public institutions, were 2,407, 1,953, and 1,719, in the three quarters of the year 1850; and of the 6,079, 3,498 were males, and 2,581 females. One in six of the deaths of the inhabitants of London, took place in public institutions, during the three quarters.

The mortality was generally low in the Southeastern and Midland counties. Southampton suffered severely from scarlatina. Essex was visited by diarrhœa, and a few cases of cholera. Norwich suffered from a severe epidemic of scarlatina. The poor, whose dwellings were in unhealthy places, suffered most. Scarlatina prevailed in other parts of Norfolk, and raised the mortality. In Wilts, Dorset, Devon, Cornwall, and Somerset, where cholera was very fatal in 1849, the mortality returned to its normal state. The Registrar of Yeovil remarks that—

No less than 26 of the 55 deaths have occurred from fever or other affections directly induced by it. Nearly all the cases of fever happened in Vicarage, Silver, and Middle streets, all of which lie directly under an extremely over-crowded churchyard, over which the wind had been blowing in a south and southwesterly direction for some time; this, with the imperfect drainage of the above streets, fully accounts for the origin of the disease.

Small-pox and scarlatina are noticed in the West Midland counties. In Hereford the Registrar observes:—

Small-pox prevails to a considerable extent in this district, having been introduced by a child sickening in a canal-boat, which came lately from Gloucester; the child died in Gaol-lane, from which place the disease spread itself over the city. In nearly 60 cases 7 proved fatal. Scarlatina has also prevailed slightly.

The Registrar of Burslem, in the Potteries, ascribes "the increase of births and decrease of mortality to improved sanitary arrangements, abundance of employment, and cheap food."

Bilston, which suffered last year so much by cholera, from the neglect of sanitary measures, is now losing lives from the neglect of vaccination. The Registrar says:—

The deaths are above the average, owing to the prevalence of small-pox. I have never known this disease so general among the working classes of Bilston. Many adults have taken it and died. It carried off

48 persons, 40 of whom had not been vaccinated. In several houses the whole of the children have been infected, and two or three have died. I find a growing aversion to vaccination among the poor, to the neglect of which I attribute so great a number of fatal cases.

Diarrhœa prevailed in Birmingham; cholera was fatal in a few towns in different parts of the country, but was nowhere epidemic. The mortality of Liverpool, Manchester, Leeds, Sheffield, and Hull, was below the average.

Several of the Registrars refer to the prosperous state of their districts, in connection with the increase of births and the diminished mortality:—

383; 2. STOURBRIDGE; Stourbridge.—Deaths 79. The deaths are 43 below those of the corresponding quarter of 1849, which is attributable to the salubrity of the weather, regular employment, abundance of good provisions, and the improved sanitary condition of the district. Diarrhœa has been less prevalent than usual at this season of the year.

386; 1. MARTLEY; Martley.—Only one illegitimate birth. The blessing of cheap food appears to have a good effect on public morals as well as public health. There is not such dread of the expensiveness of housekeeping among the poor as formerly, when provisions were dear.

395; 1. ASTON; Deritend.—Births 212; deaths 105. There appears a small increase in the births, which may be caused by the increase of population. Additional dwellings of small size, have lately been erected in the district. The deaths are a little below the average, which I am at a loss to account for, unless it arises from the bettered condition of the working classes, owing to the improved state of trade and reduced price of food.

468; 4. BOLTON; Halliwell.—Births 56; deaths 13. The deaths are greatly below the average, which I attribute to the working people being better fed, trade being good, and all in full employment.

468; 10. BOLTON; Little Bolton.—Births 220; deaths 124. The number of births is considerably more than the average of the corresponding quarters of the last 13 years. The increase seems to be consequent on the steadiness of trade and influx of persons resident in the township, together with a large number of new cottages, which are all occupied, chiefly by the working classes. The deaths are about the average of corresponding quarters. Measles has been rather prevalent, and 17 deaths have occurred. The inhabitants have been free from any other epidemic, and are at present in a generally healthy state.

477; 2. HASLINGDEN; Rossendale.—Births 107; deaths 44. Births, corresponding quarter last year, 66; deaths, corresponding quarter last year, 34. 8 deaths from measles, 2 without medical attendant. I cannot say to what the increase of births is to be attributed, except it be the improved condition of the laboring population, from plenty of employment and cheapness of food.

479; 1. CLITHEROE; Gisburn.—Births 27; deaths 6. The deaths are below the average, which may be accounted for, perhaps, by the very fine weather, while provisions have been low in price, and work plentiful.

487; 1. SEDBERGH; Sedbergh.—Births 17; deaths 4. The mortal-

ity has been far below the average for upwards of 18 months. I should be at a loss to account for it, otherwise than that the necessaries of life have been plentiful and cheap, and the laboring classes have had sufficient food.

498; 5. HALIFAX; Elland.—Births 116; deaths 37. The proportion of births to deaths is nearly 3 to 1. The number of the latter is less during the present quarter than in any previous one under the Registration Act. The district is remarkably healthy, and the whole of the population well employed, which gives them command of the necessaries of life and improves their physical condition. The present contrasts favorably with the period of limited employment and scarcity of provisions, when the number of deaths in this district was nearly equal to the births.

The next extract presents an exception to the generally prosperous state of the country:—

601; 4. CRICKHOWELL; Llanelly.—Births 86; deaths 44. This subdistrict has been unusually healthy. The iron trade is still without animation.

The following note refers to a subject of great public importance:—

553; 2. TYNEMOUTH; North Shields.—Births 135; deaths 72. The police arrangements to prevent the influx of vagrants, have tended to promote the health of the population, as most of the infectious diseases have been traced to this source. In fact, in one locality, Pumpwell-lane, in the township of North Shields, which is the resort of these persons, it is said that the Poor-law Union had better pay rent for the whole property and shut it up, than incur the great expense which it entails on the union.

XXIX. FORMS OF CERTIFICATES RECOMMENDED TO BE USED IN THE SYSTEM OF REGISTRATION PROPOSED TO BE INTRODUCED INTO SCOTLAND.

[From the Journal of the Statistical Society of London, Vol. XI, p. 286.]

1. CERTIFICATE OF MARRIAGE.

DISTRICT, Marylebone. No. in Register, 11.

On March 3d, 1847.

At Marylebone Parish Church.

MARRIAGE, *after Bans*, was solemnized between US, according to *the rites and ceremonies of the Established Church.*

SIGNATURE, *William Hastings.*

DESCRIPTION {
- residence { present, } 3, *South street, Marylebone.* / { usual, } *Chelmsford, Essex.*
- age, 32.
- rank or profession, *carpenter.*
- condition, *widower.*
- if widower { former wives, } { first deceased in 1840, *4th Nov.* } { children by, liv'g 2, dead 1. }
- birth-place, *Bristol.*
- parents' names & rank or profession, *Peter Hastings, dec., upholsterer, and Ann Hastings, M. N. Payne, schoolmistress.*
}

SIGNATURE, Sophia Ann Mitchell.

DESCRIPTION { residence { present, } 17, *High street*, / { usual, } *Ditto*. ; age, 20. ; rank or profession, *dressmaker*. ; condition, *spinster*. ; if widow { former husband } first deceased in . . . . . { children by / liv'g – dead – } ; birth-place, *Longbridge, Deverell, Wilts.* ; parents' names & rank or profession, *Geoffrey Mitchell, butcher, & Sarah Mitchell*, M. N. *Evans, dec.* }

WITNESSES, *John Hastings—Jane Mitchell.*

OFFICIATING MINISTER, *James Hollingshead, Vicar.*

2. CERTIFICATE OF BIRTH.

DISTRICT, St. Pancras. SUB-DISTRICT, Tottenham Court. No. in Register, 98.

CHILD, Name, and Sex, *William Aste*, (present,) born 5*h.* 30*m.*, February 11th, 1847, at 169, *Tottenham Court Road.*

PARENTS—Father { name, *Henry Aste.* ; rank or profession, *corn dealer.* ; age, 40. ; born at *Tingewick, Bucks.* ; married first in 1830, *at St. Pancras.* ; issue, 4 boys, 4 girls living ; 1 girl dec. }

Mother { name, *Harriet Aste*, M. N. *Hills*, (*her 9th child.*) ; rank or profession, ; age, 37. ; born at *St. Pancras.* ; married first in (*see Father.*) ; issue, *ditto.* }

INFORMANTS AND THEIR SIGNATURES, *Henry Aste, father ; Harriet Aste, mother.*

WITNESSES, *Euphemia Curry*, nurse; certified by *M. Clayton*, accoucheur.

REGISTERED, on March 10th, 1847, at 169, *Tottenham Court Road*, by *John Wells, Registrar.*

3. CERTIFICATE OF DEATH.

DISTRICT, Poplar. SUB-DISTRICT, Poplar. No. in Register, 1476.

NAME { *William Canty.* ; rank or profession, *dock laborer.* ; sex, *male.* ; age, 62. ; died on the 28*th of Feb.*, 1847, 6½ A.M., *at* 16 *Cottage Row.* }

CAUSE OF DEATH, *Pneumonia, two months*, as certified by *H. Bloomfield*, who last saw deceased *February* 27, 1847.

BURIAL-PLACE, *Catholic burial-ground, Wade street*, as certified by *M. Rutley, undertaker.*

BORN AT *county of Cork, Ireland ;* lived in this district, 36 *years in Poplar.*

Parents' names & rank or profession, Father—*Timothy Canty, shoemaker, dec.* / Mother—*Mary Canty*, M. N. *Nicholas, dec.*

MARRIED in the *parish of Scrill, Ireland, at the age of* 22, *to Honora M'Carty, by whom he had*
ISSUE, (1) *Timothy*, 31, (2) *William*, 30, (3) *Mary*, 29, (4) *John, dec. at* 27, *in* 1846, (5) *Catherine, dec. at* 1, *in* 1820, (6) *Stephen*, 21.
INFORMANT, *Honora Canty, her + mark, widow.*
WITNESS, *Mary Canty, daughter.*
REGISTERED on March 3d, 1847, by *T. W. Gagen, Registrar.*

XXX. LAWS OF MASSACHUSETTS IN RELATION TO THE REGISTRATION OF BIRTHS, MARRIAGES, AND DEATHS.

SECT. 46. The town clerk shall keep a record of the births and deaths of all persons within his town, and coming to his knowledge; and he shall specify in such record the day of each birth and death, and the names of the parents of such persons, if known.

SECT. 47. Parents shall give notice to the clerk of their town of all the births and deaths of their children; and every householder shall give the like notice of every birth and death happening in his house; and the eldest person next of kin shall give such notice of the death of his kindred; and the keeper of any almshouse, workhouse, house of correction, prison or hospital, and the master or other commanding officer of any ship, shall give the like notice of every birth and death, happening among the persons under his charge; and every person neglecting to give such notice for the space of six months after the birth or death shall have happened, shall forfeit to the use of the town a sum not exceeding five dollars.—[*Revised Statutes, page* 182.]

SECT. 17. Every justice and minister shall keep a record of all marriages solemnized before him, and in the month of April, annually, shall make a return, to the clerk of the town in which he resides, of a certificate, containing the Christian and surnames, and places of residence, of all the persons who have been by him joined in marriage within the year then last past, and also the time when, and the name of the town in which, such marriages were respectively solemnized; and when neither of the married persons belongs to, or is resident in, the town in which the justice or minister resides, then such justice or minister shall, within thirty days after such marriage, also return a like certificate of the town in which one or both of the married persons may reside; and all marriages, so certified to the clerk, shall be forthwith recorded by him in a book to be kept for that purpose.

SECT. 18. Every justice of the peace and minister, who shall neglect to make such returns, shall, upon conviction thereof, forfeit for each neglect a sum not less than twenty nor more than one hundred dollars; one moiety thereof to the use of the county in which he resides, and the other moiety to the use of the person who shall prosecute therefor.—[*Ibid, page* 477.]

An Act relating to the Registry and Returns of Births, Marriages, and Deaths. Passed March 16, 1844.

SECT. 1. The clerks of the several cities and towns in this Commonwealth shall, annually, in the month of June, transmit to the Secretary of the Commonwealth, a certified copy of their records of births, mar-

riages, and deaths, which have occurred within their respective cities and towns during the year next preceding the first day of said month.

The births shall be numbered and recorded in the order in which they are received by the clerk. The record of births shall state in separate columns the date of the birth, the place of birth, the name of the child, (if it have any,) the sex of the child, name and surname of one or both of the parents, occupation of the father, residence of the parents, and the time when the record was made.

The marriages shall be numbered and recorded in the order in which they are received by the clerk. The record of marriages shall state, in separate columns, the date of the marriage, the place of the marriage, the name, residence and official station of the person by whom married, the names and surnames of the parties, the residence of each, the age of each, the condition of each, (whether single or widowed,) the occupation, names of the parents, and the time when the record was made.

The deaths shall be numbered and recorded in the order in which they are received by the clerk. The record of deaths shall state in separate columns, the date of the death, the name and surname of the deceased, the sex, condition, (whether single or married,) age, occupation, place of death, place of birth, names of the parents, disease or cause of death, and the time when the record was made.

Sect. 2. The school committee of each city or town shall, annually, in the month of May, ascertain, from actual inquiry or otherwise, all the births which have happened within such city or town during the year next preceding the first day of said May, together with the facts concerning births required by the first section of this act, and shall make an accurate return thereof to the clerk of such city or town, on or before the last day of said May; and the said school committee, or other person authorized by them to make such returns, shall be entitled to receive from the treasury of such city or town, five cents for each and every birth so returned.

Sect. 3. Every justice, minister, and clerk, or keeper of the records of the meeting wherein any marriages among the Friends or Quakers shall be solemnized, shall make a record of each marriage solemnized before him, together with all the facts relating to marriages required by the first section of this act; and each such justice, minister, clerk, or keeper, shall, between the first and tenth days of each month, return a copy of the record for the month next preceding, to the clerk of the city or town in which the marriage was solemnized; and every person, as aforesaid, who shall neglect to make the returns required by this section, shall be liable to the penalty provided in the eighteenth section of the seventy-fifth chapter of the Revised Statutes.

Sect. 4. Each sexton or other person, having the charge of any burial-ground in this Commonwealth, shall, on or before the tenth day of each month, make returns of all the facts required by the first section of this act, connected with the death of any person whose burial he may have superintended during the month next preceding, to the clerk of the city or town in which such deceased person resided at the time of his death. And such sexton, or other person, shall be entitled to receive, from the treasury of the city or town to which the return is

made, five cents for the return of each death made agreeably to the provisions of this act.

SECT. 5. The clerk of each city or town shall be entitled to receive from the treasury of such city or town, eight cents for the record of each birth and death: *provided* such clerk shall comply with this act in all respects.

SECT. 6. It shall be the duty of the clerks of the several cities and towns, to make such distribution of blank forms of returns as shall be designated by the Secretary of the Commonwealth.

SECT. 7. The Secretary of the Commonwealth shall prepare and furnish to the clerks of the several cities and towns in this Commonwealth, blank books of suitable quality and size, to be used as books of record, according to the provisions of this act, and also blank forms of returns, as hereinbefore specified, and shall accompany the same with such instructions and explanations as may be necessary and useful; and he shall receive said returns, and prepare therefrom such tabular results as will render them of practical utility; and shall make report thereof annually to the Legislature, and generally shall do whatever may be required to carry into effect the provisions of this act.

SECT. 8. Any clerk who shall neglect to comply with the requirements of this act, shall be liable to a penalty of ten dollars, to be recovered for the use of any city or town where such neglect shall be proved to have existed.

SECT. 9. An act entitled "an act relating to the registry of births, marriages, and deaths," passed on the third day of March, in the year one thousand eight hundred and forty-two, is hereby repealed.

SECT. 10. This act shall take effect from and after its passage.

An Act relating to the Registration of Births, Marriages, and Deaths. Passed May 2, 1849.

SECT. 1. Town and city clerks are hereby authorized and required to obtain, record, and index, the information concerning births, marriages, and deaths, now required by law. Towns and cities, containing more than ten thousand inhabitants, may choose a person, other than the town or city clerk, to be town or city registrar, to perform this duty instead of the town or city clerk; and said registrar shall take an oath faithfully to perform the duties of the office.

SECT. 2. The fees of the clerk and registrar, for obtaining, recording, and indexing the information required by this act, shall be as follaws:—For each birth, twenty cents; for each intention of marriage, including the certificate to the parties, fifty cents; for each marriage solemnized, ten cents; for each death, five cents; and the undertaker shall be allowed ten cents for information concerning each death which he returns to the clerk or registrar; said fees for births, deaths, and marriages solemnized, shall be paid by the town; and, for intentions of marriage, by the parties having such intentions: *provided*, *however*, that the aggregate compensation, allowed to any clerk or registrar, may be limited by any town or city containing over ten thousand inhabitants, but in no case so as to prevent the full execution of this act.

SECT. 3. Any undertaker, or other person, having the superintendence of the burial of any deceased person, who shall neglect or refuse to obtain and return the information required by this act, concerning each person deceased, whose burial shall come under his superintend-

ence, shall be liable to a penalty not exceeding twenty dollars for each neglect, and, if an undertaker, to be deprived of his office. And every clerk or registrar, who wilfully neglects or refuses to perform the duties herein prescribed, shall be liable to a penalty of not less than twenty, nor more than one hundred dollars, for each neglect or refusal. All penalties and forfeitures under this act, may be recovered by any person who shall sue for the same, one half thereof to the use of said complainant, and the other half to the use of the town or city in which the forfeiture shall have been incurred.

Sect. 4. The returns required to be made on the first day of February, in the year one thousand eight hundred and fifty, shall include the births, deaths, and marriages, from the first day of May, in the year one thousand eight hundred and forty-eight, to said day of return.

Sect. 5. Copies of records, in the several towns and cities, of the births, marriages, and deaths, which occurred during the next preceding year, ending December thirty-first, shall be returned to the Secretary of State, annually, on or before the first day of February. The blank forms of said returns shall be printed on paper of uniform size; and those for each year, when filled out and returned to the office of the Secretary of State, shall be bound together in one or more volumes, and shall be furnished with an index. Blank books, for indexes to the town registrars, shall be prepared by the Secretary of State, and furnished to the several towns and cities, at the expense of the Commonwealth.

Sect. 6. All parts of acts inconsistent with the provisions of this act are hereby repealed.

XXXI. Suggestions for forming Sanitary Libraries.

The Commission have recommended (pp. 123, 309, 311,) that small appropriations be made annually for the purchase of publications for forming sanitary libraries for the General and Local Boards of Health. A judicious selection of such works would be of great value, and the expenditure an economical one. It is hardly necessary to remark, that by bringing together the recorded experience of different associations and individuals, and the facts they gather, so as to be accessible to Boards of Health, they will be able to discharge their duties more intelligently. To aid those who desire to form such libraries, we have subjoined the titles of a few works which we have examined and found valuable. They comprise a small part only of those to which the Commission have had access; and they possess a greater or less degree of merit. Some which are quite useful contain principles and statements with which we do not entirely agree. The catalogue might be greatly extended and made to include many other works perhaps equally valuable. New publications on the subject are also constantly issuing from the press.

1. *American Publications.*

Annual Reports, and other Documents of the Secretary of State of Massachusetts, relating to the Registration of Births, Marriages and Deaths; the Legislative Documents; and the Local Reports and Statements of cities and towns, relating to the same subject.

The Laws relating to Public Health and Sanitary Police of the several States; the Ordinances, Rules and Regulations of Cities and Towns in the states; and the Practical Forms used in carrying them into execution.

Reports, Documents, Bills of Mortality, &c., of different Cities, Boards of Health, Health Committees, and others. If the plan recommended should be adopted, these works may generally be obtained in exchange with local boards, (p. 126.)

Reports and Documents relating to Asylums, Institutions and Hospitals for the Blind, the Deaf and Dumb, the Insane and the Idiotic; to Almshouses and Pauperism; to Crime, Houses of Refuge, Prisons and Penitentiaries, Prison Discipline, and Prison Associations.

"The Transactions of the American Medical Association," Philadelphia, Vol. I, 1848; II, 1849, pp. 956; III, 1850, pp. 499. To be continued. $2 per volume.

"Medical Communications of the Massachusetts Medical Society;" First series, Boston, 1790—1829, 4 vols. 8vo. Second series, 1830, to —, 8vo. Vol. IV is in course of publication.

"Transactions of the Medical Society of the State of New York," Vol. I to VIII, 8vo., 1832—1849. Since 1849, these transactions have been published as part of the documents of the state.

"Statistical Report of the Sickness and Mortality in the Army of the United States." By Thomas Lawson, M. D., Surgeon General, Washington, 1840, 8vo., pp. 346.

"The Climate of the United States, and its Endemic Influences." By Samuel Forry, M. D. New York, 1842, 8vo, pp. 379.

"A Brief History of Epidemic and Pestilential Diseases, with the principal Phenomena of the physical World which precede and accompany them, and Observations from the Facts stated. By Noah Webster. Hartford, 1799. 2 vols. 8vo., pp. 348, 352.

"Sketches of Epidemic Diseases in the State of Vermont, from its first settlement to the year 1815, with a Consideration of their Causes, Phenomena and Treatment. To which is added Remarks on Pulmonary Consumption." By Joseph A. Gallup, M. D. Boston, 1815, 8vo, pp. 419.

The Censuses of the United States, at different periods; Shattuck's Census and Statistics of Boston, for 1850; the Census of Charleston, S. C., 1848; and the censuses of other cities. Works on a census referred to, page 128.

Chickering "On the Population of Massachusetts;" and on "Immigration into the United States."

"Progress of the United States in Population and Wealth in fifty years, as exhibited by the Decennial Census." By George Tucker. New York, 1843, pp. 211.

"Practical Physiology for the use of Schools and Families." By Edward Jarvis, M. D. Boston, 1849, 12mo, pp. 396, 75 cts.

"Physician and Patient, or a Practical View of the Mutual Duties, Relations and Interests of the Medical Profession, and the Community." By Worthington Hooker, M. D., of Norwich, Ct. New York, 1849. 12mo, pp. 453, $1 25.

"Human Health, or the influence of Atmosphere and Locality, change of air and climate, seasons, food, clothing, bathing, exercise,

sleep, &c., &c., &c., on Healthy Man; constituting elements of Hygiene." By Robley Dunglison. Philadelphia, 1849, 8vo, pp. 464, $2.

"Elements of Medical Jurisprudence." By Theodric Romeyn Beck, M. D., LL. D., and John B. Beck, M. D. Tenth edition. Vol. I. Albany, 1850, pp. 866. Vol. II in press. A very valuable work.

The following are very useful as books of reference :—

"Medical Lexicon, a Dictionary of Medical Science, containing concise Explanations of the various Subjects and Terms, with the French and other Synonymes; Notices of Climate and of celebrated mineral waters; Formulas for various officinal and empirical Preparations," &c. &c. By Robley Dunglison. Last edition, 7th. Philadelphia, 1850, 8vo, pp. 930, $3 50.

"A Dictionary of Practical Medicine, comprising General Pathology, the Nature and Treatment of Diseases, Morbid Structures, and the Disorders especially incidental to Climates, to the Sex, and to the different Epochs of Life." By James Copland. Reprinted from the English edition, with Additions by Charles A. Lee. New York, 1846. 3 vols. 8vo, pp. 1,254, 1,067. The 3d volume not yet completed.

"The American Journal of Medical Sciences," Philadelphia. Edited by Isaac Hays, M. D. Published quarterly. Each number contains about 280 pages. $5 per annum.

The Boston Medical and Surgical Journal. Published weekly, 8vo, at $3 per annum.

2. *English Publications.*

"Report from the Select Committee on Parochial Registration, with Minutes of Evidence, and Appendix." London, 1833. 1 vol. fol., pp. 189.

Annual Reports of the Poor Law Commissions. The first was published in 1835, and one in each year since. Two editions are published, one in folio and one in 8vo.

"Statistical Reports on the Sickness, Mortality and Invaliding among the British Troops." London, 1838—1841. 4 vols. fol., pp. 138, 218, 83, 114.

"Statistical Reports on the Health of the Navy," for the years 1830—1836. London, 1840, 1841. 2 vols. fol., pp. 324, 340. 7*s.* 6*d.*

"Reports of the Commissioners for Inquiring into the State of large Towns and Populous Districts." London, 1844 and 1845. 2 editions; one in 2 vols. fol., 676, 689, with 70 maps, plates and illustrations; the other in 4 vols., 8vo.

Report "On the Sanitary Condition of the Laboring Population of Great Britain," with Appendix, by Edwin Chadwick, Esq. London, 1842. 1 vol. 8vo, pp. 560.

"A Supplementary Report on the Results of a Special Inquiry into the Practice of Interments in Towns, made at the request of Her Majesty's Principal Secretary of State for the Home Department." By Edwin Chadwick, Esq., Barrister at Law. London, 1843. 1 vol. 8vo, pp. 279.

"Report on the Sanitary Condition of the City of London for the year 1848–9." By John Simon. 1849, fol. pp. 43.

"Annual Reports of the Registrar-General of Births, Deaths and Marriages, in England." London, 1839 to ——. Two editions of these very valuable reports are published; the 1st in Parliamentary

folio, and the 2d, revised, in 8vo. The First Annual Report, 8vo edition, was published in 1839, pp. 168, at 3*s.* cloth; Second Report, in 1840, pp. 247, at 4*s.*; Third Report, in 1841, pp. 362, at 4*s.*; Fourth Report, in 1842, pp. 361, at 4*s.*; Fifth Report, in 1843, pp. 604, 5*s.*; Sixth Report, in 1845, pp. 666, at 5*s.*; Seventh Report, in 1846, pp. 347, at 5*s.*; Eighth Report, pp. 366, and Ninth Report, pp. 250, in 1849, both bound in one volume. The appendix to the Ninth Report contains the Population and the Law of Mortality in the different districts. London, 1849, 1 vol. fol., pp. 462.

"Quarterly Return of the Marriages, Births and Deaths, registered in the Divisions, Counties and Districts of England." The seventh volume of the first series of these publications was published in 1848, pp. 96, folio. In 1849, a new series, in 8vo, was commenced, and has since been continued under the authority of the Registrar General. He has also published in folio, "Births and Deaths registered in London," each week. For opinions as to the authority and value of these publications, see this Report, pp. 32, 33.

The General Board of Health of England have published—

"Report on Quarantine." London, 1849, 8vo, pp. 172, 1*s.*

"Report by the General Board of Health on the Measures for the Execution of the Nuisance Removal, and Diseases Prevention Act, and the Public Health act, up to July, 1849." London, 1849. 8vo, pp. 135, 1*s.*

"Report on a General Scheme of Extramural Sepulture." London, 1850, 8vo, pp. 172, 1*s.*

"Report on the Asiatic Cholera, 1848–9." London, 1850, 8vo, p. 157, 1*s.*

The Health of Towns Association have published many valuable works. And Sanitary Reports relating to particular cities and towns in England, many of which have great general value and interest, are printed from time to time, and are worthy of being placed in any sanitary library. It may also be useful to obtain the recent laws relating to the Registration of Births, Marriages and Deaths, and for the promotion of public health, in England; and also the special sanitary acts of different cities in that country; and the practical forms used in carrying them into execution.

Sanitary Economy; its Principles and Practice, and its Moral Influence on the Progress of Civilization. Edinburgh, 1850. 16mo, pp. 330. Messrs. Chambers. 3*s.*

Three works by Dr. Andrew Comb,—"Treatise on the Physiological and Moral Management of Infancy;" "The Principles of Physiology applied to the Preservation of Health, and of the importance of Physical and Mental Education;" and "The Physiology of Digestion considered with relation to the Principles of Dietetics," should be in every sanitary library; and be studied by every one who wishes to maintain personal health. New editions, enlarged, are in the course of publication.

"The British and Foreign Medico-Chirurgical Review, or Quarterly Journal of Practical Medicine and Surgery." London. Published quarterly, about 300 pages each issue. This Review was commenced January, 1848, and takes the place of the Forbes' British and Foreign Medical Review, and the Medico-Chirurgical Review, both of which

were discontinued; and may be considered the leading medical review of the world. It is an able advocate of sanitary reform. Republished in New York, at $3 per annum.

"Journal of Public Health," London, November, 1847; October, 1849. 2 vols. 8vo, pp. 332 each. 6*s.* each. Discontinued.

"Liverpool Health of Towns Advocate." Liverpool, 1845–1847. 1 vol. 8vo, pp. 256. 2*s.* Discontinued.

"Journal of the Statistical Society of London." In quarterly parts. 8 vo, pp. 96, 2*s.* 6*d.* Commenced May, 1838. Vol. XIII in course of publication.

It usually costs about 30 to 33 cents *per shilling* sterling to import books from England, and about the same *per franc* from France.

3. *French Publications.*

Rapports Généraux des Travaux du Conseil de Salubrité, pendant les Années 1829 à 1839 inclusivement. Publiés par ordre de M. le conseiller d'état, Préfet de Police. Paris, 1840. 4to, pp. 268.

General Reports of the Labors of the Council of Health during the years 1829 to 1839, inclusively, published by order of the Councillor of State,—the Prefect of the Police. Paris, 1840, 4to, pp. 268.

A Second General Report of the same kind, embracing the six years, 1840–1845, inclusively, was published in 1847, 4to, pp. 352.

These and several other rare and valuable public documents, were presented to the Commonwealth by the liberality of the Government of France, and the Municipal authorities of Paris.

Traité de la Salubrité dans les grandes villes; par MM. les Docteurs J. B. Monfalcon et A. P. I. de Polinière, Membres du Conseil de Salubrité du Rhone. Paris, 1846, in-8 de 551 pages, 7*f.* 50*c.*

A Treatise on Causes affecting Health in Large Towns. By Doctor J. B. Monfalcon and A. P. J. de Polimère, Members of the Council of Health of the Rhone.

Annales d'Hygiène publique et de Médecine légale. Paris, 1829, to ——.

Annals of Public Health and Medical Jurisprudence.

This valuable periodical work was commenced in 1829, and has since been published in quarterly parts, and in semi-annual volumes of about 500 pages, 8vo, each, at 18 francs per annum. The 44th volume was completed in 1850.

Sur l'Homme, et le Développement de ses Facultés, par M. A. Quetelet, Secrétarie Perpetuel de l'Académie Royal de Bruxelles. Paris, 1835. 2 vol. in-8, 18*fr.*

A Treatise on Man and the Development of his Faculties, by M. A. Quetelet, Perpetual Secretary of the Royal Academy of Brussels, &c. &c.

An English translation of this very valuable work, with additions, was published in Edinburgh in 1842, by Messrs. Chambers, in 1 vol., royal 8vo, pp. 126, at 3*s.*

Traité d'Hygiène publique et privée, par le Docteur Michel Levy. Deuxième édition, revue et augmentée. Paris, 1850. 2 vol. in-8. Ensemble, pp. 1,500, 15*f.*

A Treatise on Public and Personal Health. By Michael Levy, M. D. 2d edition, revised and enlarged. Paris, 1850. 8vo, pp. 1,500, 15*f.*

XXXII. STATEMENT SHOWING WHAT PER CENT., OR WHAT NUMBER IN 100, IS EQUAL TO 1 IN A GIVEN NUMBER; AND 1 IN WHAT NUMBER IS EQUAL TO A GIVEN PER CENT., OR A GIVEN NUMBER IN 100.

Equalities.		Equalities.		Equalities.		Equalities.		Equalities.	
1 in	is equal to Per cent.	1 in	is equal to Per ct.	1 in	is equal to Per cent.	1 in	is equal to Per cent.	1 in	is equal to Per ct.
1	100.000	41	2.439	81	1.234	121	.826	161	.621
2	50.000	42	2.380	82	1.219	122	.819	162	.617
3	33.333	43	2.325	83	1.204	123	.813	163	.613
4	25.000	44	2.272	84	1.190	124	.806	164	.609
5	20.000	45	2.222	85	1.176	125	.800	165	.606
6	16.666	46	2.173	86	1.162	126	.793	166	.602
7	14.285	47	2.127	87	1.149	127	.787	167	.598
8	12.500	48	2.083	88	1.136	128	.781	168	.595
9	11.111	49	2.040	89	1.123	129	.775	169	.591
10	10.000	50	2.000	90	1.111	130	.769	170	.588
11	9.999	51	1.960	91	1.098	131	.763	171	.584
12	8.333	52	1.923	92	1.086	132	.757	172	.581
13	7.692	53	1.886	93	1.075	133	.751	173	.578
14	7.142	54	1.851	94	1.063	134	.746	174	.574
15	6.666	55	1.818	95	1.052	135	.740	175	.571
16	6.882	56	1.785	96	1.041	136	.735	176	.568
17	5.882	57	1.754	97	1.030	137	.729	177	.564
18	5.555	58	1.724	98	1.020	138	.724	178	.561
19	5.263	59	1.698	99	1.010	139	.719	179	.558
20	5.000	60	1.666	100	1.000	140	.714	180	.555
21	4.761	61	1.639	101	.990	141	.709	181	.552
22	4.545	62	1.612	102	.980	142	.704	182	.549
23	4.347	63	1.587	103	.970	143	.699	183	.546
24	4.166	64	1.562	104	.961	144	.694	184	.543
25	4.000	65	1.538	105	.952	145	.689	185	.540
26	3.846	66	1.515	106	.943	146	.684	186	.537
27	3.703	67	1.492	107	.934	147	.680	187	.534
28	3.571	68	1.470	108	.925	148	.675	188	.531
29	3.448	69	1.449	109	.917	149	.671	189	.529
30	3.333	70	1.428	110	.909	150	.666	190	.526
31	3.225	71	1.408	111	.900	151	.662	191	.523
32	3.125	72	1.388	112	.892	152	.657	192	.520
33	3.033	73	1.369	113	.884	153	.653	193	.518
34	2.941	74	1.351	114	.877	154	.649	194	.515
35	2.857	75	1.333	115	.869	155	.645	195	.512
36	2.777	76	1.315	116	.862	156	.641	196	.510
37	2.702	77	1.298	117	.854	157	.636	197	.507
38	2.631	78	1.282	118	.847	158	.632	198	.505
39	2.564	79	1.265	119	.840	159	.628	199	.502
40	2.500	80	1.250	120	.833	160	.625	200	.500

This table is read thus. Suppose we wish to know what is the per centage of births, marriages or deaths, when either is 1 in 81 of the population. Look at 1 in 81 at the top of the central column, and it is found to be 1.234 per cent. Or, if the known per centage be 2.439, as in the next left-hand column, it is found to be 1 in 41.

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